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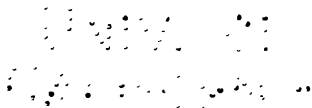
THE HISTORY

OF THE

MIDLAND RAILWAY

BY
CLEMENT E. STRETTON

WITH ONE HUNDRED ILLUSTRATIONS AND SIX DIAGRAMS



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PREFACE

IT is hardly to be wondered that the subject of communication in the Midland Counties has always interested me, for our family has long been connected with the railways, canals, and tramways of Leicestershire. As a boy I lived at New Found Pool, Leicester, close to the Leicester and Swannington Railway, and much of my time was spent on the line. My interest in this railway was strengthened when I was told that it was the key to the inner history of the Midland Railway Company. Shortly after, I became an engineering pupil, and obtained permission, through the courtesy of Mr. Edward Shipley Ellis, to make copies of the plans, sections, diagrams of locomotives, and other documents belonging to this Company. My first contribution to the history of the Midland Railway was made as long ago as the 17th July, 1867—the thirty-fifth anniversary of the opening of the Swannington line—when I read a paper at Leicester, entitled “Notes on the Leicester and Swannington Railway.”

The first part of this History deals with the various independent lines which now form the Midland Railway and events that took place prior to 1865. It has been compiled almost entirely from the books and papers forming the “Stretton Railway Collection,” which, after being sent to the Chicago Exhibition of 1893, was presented by the author and his son to the nation, and is now to be found in the Museums at South Kensington, Leicester, Liverpool, Loughborough, and Holyhead. The later History of the Railway, from 1865 to the present day, is based upon records which I have most carefully kept of every event

as it occurred, my intimate knowledge of the history of the line enabling me to arrange this material in a way which, I trust, is likely to be interesting and valuable, not only to engineers and railway men, but also to the general public.

The fact that the Midland line has been built up by amalgamations, extensions, and purchases, has rendered the work more difficult than it would otherwise have been; it has been necessary to give, not only the names of these small lines, but also the reason why they were acquired, together with a short account of their previous history. The extent of these amalgamations may be gathered from the tabulated statements on pages 348 and 349.

Though the book treats mainly of the origin and growth of the Midland Company, many of the sections are of a wider interest; *e.g.* those dealing with the invention of the first Edge-rail-way by William Jessop, and the "Outram-way" introduced by the Outrams of Alfreton. On page 259 a chart will be found showing the administration of the railway, that will probably be new to the majority of readers.

I wish to express my thanks to the Midland Railway Company for the loan of several very interesting photographs, to the Chairman and the officials for their courtesy and for lending photographs to illustrate the details of the departments. I am also indebted to Mr. G. R. Stephenson and Mr. W. H. Ellis for the loan of portraits; and to Messrs. R. Stephenson and Co., Messrs. Sharp, Stewart, and Co., The Butterley Iron Company, the late Mr. James Ellis, and the descendants of Mr. Stenson, Mr. Jessop, and Mr. Outram, for lending records which have enabled me to verify my information.

C. E. S.

SAXE-COBURG HOUSE, LEICESTER

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THE HISTORY OF THE MIDLAND RAILWAY

CHAPTER I.

THE BIRTH OF A RAILWAY

THE system of railway traction which has revolutionised the world can hardly be said to have been created, and it is more in accord with historical accuracy to describe it as having dawned—to have, in fact, been evolved out of primitive and very elementary systems for facilitating the transport of minerals. But whilst these ancient systems, which were in operation on a small scale in a limited number of districts, form the foundation and the exciting cause for better and more efficient methods, it was, of course, the introduction of a new system of traction and the harnessing of a new force by means of steam locomotives that led to the birth of modern railways.

The development of this new source of power in the service of mankind vastly increased the resources not only of this country, where it first was discovered, but it led practically to the creation of a new world—or at least a world vastly different to that before this new power was called into being. It enabled the commerce of Britain to expand and develop as it had never done before; and with extended trade and the provision of cheap and speedy communication from one part of the country to another it proved an instrument for the elevation and advancement of all ranks and conditions of men.

Without railways England under modern conditions would be impossible, for not only are railways indispensable for the trade and commerce of the country, but they are absolutely essential for the conveyance of food for the inhabitants of our great industrial centres.

It is only seventy years ago that the first modern railway was opened;

THE HISTORY OF THE MIDLAND RAILWAY

but since the time of that great experiment the country has been covered with a network of lines from one end to the other. In this great expansion which has become of world-wide importance the Midland Railway has played a very important part. Some of the lines and systems which it owns to-day were amongst the earliest lines of any kind that were constructed, and they form important parts of those methods of traction by means of horses which led to the introduction of modern railways.

The new system was hailed with joy and wonder in all those towns and places where in early days it was introduced; and although familiarity may have in these days somewhat obscured our eyes to the beauty and grandeur of a train in rapid flight and a locomotive in full steam, yet it is by no means difficult to understand the astonishment of those who for the first time witnessed so great a revolution. In recording the history of the Midland System it will be necessary to give the reader glimpses from contemporary records of what was at the time so wonderful a spectacle.

The Midland Railway Company, as we know it to-day under its present style and title, was incorporated by an Act of Parliament passed on May 10th, 1844, by virtue of which three previously existing independent railway companies, namely the "North Midland," "Midland Counties," and "Birmingham and Derby Junction," were on and from that date dissolved, and their railways and capital became consolidated and incorporated as "The Midland Railway Company."

Strictly speaking, it will be seen that the present Company has existed for a period of over fifty-six years, but *actually* the ways, works, and traffic of the undertakings which it took over, as well as those which it afterwards acquired, date back to a far more remote period. In order, therefore, to fully understand the reasons why the original lines were made and the causes which led to the "consolidation" in the year 1844, it is necessary to investigate the histories of the three independent companies above mentioned.

The first portion of the Midland Railway constructed on modern principles, worked by locomotives, and conveying passengers as well as minerals, was, beyond all question, the line from Leicester to Swannington. It was the earliest line of railway now belonging to the Midland constructed by George Stephenson and his son Robert on the same plan which they had previously introduced with such great success between Liverpool and Manchester. Not only the engineers, but the first manager, Mr. George Vaughan, the locomotive men, the man to work the incline, the platelayers, the guard, were all brought from the Liverpool and Manchester line to instruct the local men to become

proficient in railway management ; and the rules and regulations of the Liverpool and Manchester were also adopted. The only difference between the two railways was that whereas the Liverpool and Manchester was a double line and had both passenger and goods trains, the Leicester and Swannington was a single line and had mixed trains carrying both passengers and minerals. By this means the new railway system was brought down from the north, where it had hitherto alone existed, into the very centre of England.

For many generations coal mines have been worked in the Swannington and Coleorton district of Leicestershire, also in the Erewash Valley, Nottinghamshire, and for very many years the only means of conveying the coal to the various towns and markets was by horses and carts upon the common road, a method which proved expensive and unsatisfactory.

The colliery owners in both Leicestershire and Nottinghamshire were anxiously looking for an improved means of communication, and favoured the introduction of canals ; but they were both equally anxious that the canals should be constructed so as either to give exceptional advantages to their own particular coalfield, or, failing that, then to give equal facilities to both.

To attain this object, as long ago as the year 1776 the Loughborough Navigation Company was formed to improve parts of the River Soar and make a canal from the River Trent to Loughborough. In the following year, 1777, the Erewash Canal Company commenced the construction of their undertaking, which extended from Langley Mill and the Nottinghamshire coalfield to the River Trent. Shortly afterwards it was proposed to form a Leicester Canal Company to extend the communication from Loughborough to the West Bridge at Leicester. In other words, by means of these three canals and the River Trent, the Nottinghamshire coal was to be brought to Leicester, and the Leicestershire coal would thereby be completely shut out of its own market. The Leicestershire coal owners naturally fought against such a scheme, and were powerful enough to prevent its being carried out until the Leicester Canal Company undertook to make a branch canal and tramroads extending from near Loughborough over the Charnwood Forest to the Swannington coalfields. By this means it was thought equal facilities would be conferred on both, and when, on October 27th, 1794, the canal was opened to Leicester for coal traffic, two boats arrived together, bringing loads from the rival districts.

However, the Leicestershire coal owners were destined to be disappointed, for in the winter of 1799 the banks of the Charnwood Forest Canal burst, the works were seriously damaged, and the whole

of the water ran away and flooded the surrounding district. The canal was not repaired, but the bridges and other works can still be seen and the track traced, after having been disused for over a hundred years.

Thus the failure of this branch canal effectually shut out the Leicestershire coal and gave the entire trade to the Nottinghamshire and Derbyshire coal owners, a condition of things which remained unaltered for no less than thirty-three years.

Ultimately, in October, 1828, Mr. William Stenson, one of the partners in the Whitwick Colliery, Leicestershire, paid a visit to Newcastle-upon-Tyne and the Stockton and Darlington Railway, where he was so much impressed with the value of railways and locomotives for the conveyance of coal that he returned home determined, if possible, to obtain railway communication between Whitwick and the town of Leicester.

He first examined the route for a direct line, but found the gradients far too severe; so, taking his theodolite, he walked over the country in the direction of Bagworth, Desford, and Glenfield, and on arrival at Leicester reported to his partners, Mr. Whetstone and Mr. Samuel Smith Harris, that he had found a suitable route, and after a long consultation it was decided that "Mr. John Ellis, of Beaumont Leys, near Leicester, was the best person to assist them in the project."

Mr. Stenson at once wrote a long letter to Mr. Ellis, fully explaining that the Leicestershire colliery owners at Coleorton, Swannington, and Whitwick found that coal was being sent by canal from Derbyshire and Nottinghamshire to Leicester, and that their coal was practically shut out of its own market. He added: "Our carting beats us, but I see a way to relief if we can but get up a railway company. I've tried the ground with my theodolite and find no difficulty in making a railway, though a tunnel will, I think, have to be made through the hill at Glenfield, and further that there will have to be a severe incline near to Bagworth." Mr. Ellis at once saw the importance of the undertaking to the town and trade of Leicester, and having gone over the proposed route with Mr. Stenson, he decided to make a journey to Liverpool in order to consult his friend, George Stephenson, who was then engaged in the construction of the Liverpool and Manchester Railway. After travelling upon one of the contractor's engines to Rainhill cutting, Mr. Ellis found Stephenson engaged in directing the men how to overcome a difficulty in the construction of the Rainhill bridge.

The object of the visit was explained, and Mr. Stephenson was asked to go over to Leicester to inspect the route and to become the engineer of the proposed new line. To quote the words of Mr. Ellis, "Old George" was cross, and replied, "I have thirty-one miles of railway to

make, and the directors think that that is enough for any man at a time."

It has been assumed that George Stephenson gave utterance to the celebrated dictum that "thirty-one miles of railway were enough for any man to make at a time." But this is not so. The facts were that George Stephenson, in 1826, entered into an agreement with the directors of the Liverpool and Manchester line, under which he accepted the post of engineer-in-chief of their railway at a salary of £1,000 per annum, and to devote practically the whole of his time to its construction; and further, that he was to undertake no other line until their works were completed. It must be remembered that George Stephenson in 1826 was comparatively a poor and unknown man, but in 1829 he had become celebrated, and the reason for his being "cross" was that, having already had to decline the offer to make several other lines, he was practically compelled to decline another proposal. George Stephenson by this time was far too great a man and had too thorough a grasp of railway engineering to limit his energies—unless compelled by circumstances to do so—to the construction of thirty-one miles of line. On a previous occasion he had asked the directors to allow him to undertake to make a railway from Canterbury to Whitstable, but he was refused the necessary permission, and it was on this occasion that the Chairman of the Liverpool and Manchester Railway—and not Stephenson—delivered himself of the famous saying, "No; thirty-one miles is enough for any man to make at one time." This is further confirmed by what immediately followed, for it will be seen that George Stephenson himself and his son, Robert Stephenson, who had also been engaged on the Liverpool and Manchester line, both returned with Mr. Ellis to Leicester.

Mr. Ellis decided not to take Stephenson's refusal as a final answer, but determined to wait for a few hours until Stephenson had completed the difficult task upon which at the moment he was engaged, and until the two could dine together at the inn only a short distance from the bridge.

After dinner Mr. Ellis again commenced to explain the object of his visit, and read to Stephenson the letter which he had received from Mr. Stenson. A map was produced showing the proposed route; Mr. Stephenson became interested in the subject, and agreed that there was "something in the scheme." Ultimately "Old George" remarked, "When are you going back to Leicester?"

"To-night," was the prompt reply of Mr. Ellis, to which Mr. Stephenson answered, "Then I will go with you."

On arrival at Leicester, Mr. Stenson accompanied Mr. Ellis and

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Mr. Stephenson and his son Robert over the proposed route, and when Mr. Stephenson was shown building-sand near Glenfield, granite at Groby, coal at Bagworth, Whitwick, and Swannington, brickworks at Snibston, granite at Bardon Hill, and lime at Ticknall—all of which were required in the town of Leicester—he came to the conclusion that a very useful railway could easily be constructed, and accordingly prepared a special report in favour of the projected line, which he considered could be made for “the sum of £75,450 or thereabouts.”

Mr. Ellis invited his friends and those persons likely to join in the scheme to meet him at the Bell Hotel, Leicester, when he, Mr. Stephen-



THE BELL HOTEL, LEICESTER
(Birthplace of the Leicester and Swannington Railway).

son, and Mr. Stenson fully explained the objects and details of the proposed railway. The meeting unanimously resolved to form itself into a provisional committee to obtain an Act for the making of the proposed line, and decided that the share capital should be £90,000 in 1,800 shares of £50 each, with power to raise £20,000 by loan if required. To ascertain how the money was to be raised was the next consideration; in fact, to find how much each one present was really interested in the railway. Taking a large sheet of paper, and with pen in hand, Mr. Ellis remarked, “Now, gentlemen, how many shares?” to which George Stephenson immediately replied, “Put me down for fifty.” This gave the list an excellent start, and all went well till nearly £60,000

had been subscribed ; then the matter hung fire. Mr. Ellis remarked that most of the rich men of Leicester had their money in canals, and that he feared they would not be likely to assist the railway. This caused George Stephenson to exclaim, "Give me the sheet, and I will



MR. ROBERT STEPHENSON

(Engineer, Leicester and Swannington Railway).

raise the money for you in Liverpool" ; and the sheet was accordingly handed to him.

Mr. Thomas Paget, a well-known local banker, further strengthened the hands of the promoters by then expressing his willingness to provide a sum of £20,000 on loan if necessary.

The financial part of the business being thus settled, Mr. Stephenson was asked to become the engineer for the line, but the request only brought forth the same reply as at first given to Mr. Ellis—"No; I have thirty-one miles of railway to make, and the Liverpool directors think that that is enough for any man at a time." "That being so," said Mr. Ellis, "is there any person thou canst recommend?" "Well, I think my son Robert is competent to undertake the thing." "But wilt thou be answerable for him?" asked Mr. Ellis, to which Stephenson replied, "Oh, yes, certainly."

Robert Stephenson, who was then about twenty-seven years of age, was at once appointed as engineer, and instructions were given that he should prepare the necessary plans and documents for Parliament without delay. One gentleman asked if a narrow gauge of about 3 feet would not be cheaper than the 4 feet 8½ inches gauge which Mr. Stephenson proposed. The very suggestion of a "break of gauge" was more than "Old George" could stand. "This won't do," he remarked. "I tell you the Stockton and Darlington, the Liverpool and Manchester, the Canterbury and Whitstable, and the Leicester and Swannington must all be 4 feet 8½ inches. Make them of the same width; though they may be a long way apart now, depend upon it, they will be joined together some day." This reply met with general applause, and the gauge question was finally settled for this railway, not another word being said upon the subject. This important meeting lasted for fully four hours, and it will be seen that before it concluded Mr. Ellis and his friends had succeeded in placing the scheme upon a sound basis. Therefore the Bell Hotel is without doubt the birthplace of the Leicester and Swannington Railway Company.

Mr. George Stephenson returned to Liverpool, and in a very short time the "sheet" was sent back, he having obtained the names of persons willing to provide one-third of the total capital of the Company, the list including many of the leading Liverpool merchants. These gentlemen afterwards became generally known as "The Liverpool party," and they had very great influence in this and many other railways.

Mr. Robert Stephenson accordingly immediately made the necessary survey, and the plans were duly completed. Practically he followed the route suggested by Mr. Stenson, but as far as possible he improved the gradients. At Bagworth the nature of the ground necessitated a very considerable rise, and no less than five alternative schemes were prepared, in order, if possible, to obtain a line over which locomotives could run; but even the best of these plans required

Names	Places of abode	Additions	Shares
William Woodall	Spencer near Leicester	Arch	1614
ditto	"	"	1615
George Worthington	Liverpool	Esquire	Shanty 1616
ditto	"	"	1617
ditto	"	"	1618
ditto	"	"	1619
ditto	"	"	1620
ditto	"	"	1621
ditto	"	"	1622
ditto	"	"	1623
ditto	"	"	1624
ditto	"	"	1625
ditto	"	"	1626
ditto	"	"	1627
ditto	"	"	1628
ditto	"	"	1629
ditto	"	"	1630
ditto	"	"	1631
ditto	"	"	1632
ditto	"	"	1633
ditto	"	"	1634
ditto	"	"	1635
Thomas Wright	Leicester	Arch	Four 1636
ditto	"	"	1637
ditto	"	"	1638
ditto	"	"	1639

At a Special General Meeting of the Company of Proprietors of the Leicester and Swannington Railway holden at the Bell Hotel in Leicester on the sixth day of September 1830 the foregoing Entries were made and the Common Seal of the said Company was affixed hereto.

Rev^d Wm Stanley
Chairman



FIRST REGISTER OF PROPRIETORS
(Now preserved at the Leicester Museum).

70 vint
AUSPOTLAC

that a gradient of 1 in 66 should be constructed, an incline which was out of the question for locomotives in 1830. It was therefore necessary to fall back upon the original idea of a "self-acting rope incline." Robert Stephenson regretted this, for he wrote to his father, "I am most anxious to avoid this rope business."

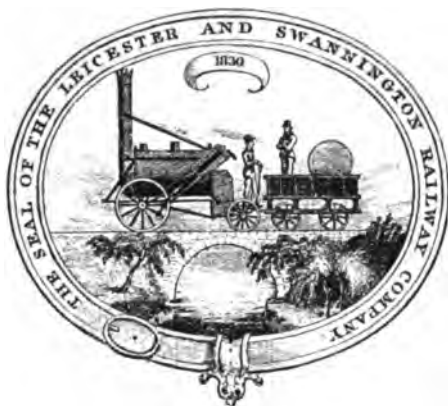
The Company's Act received the Royal Assent on May 29th, 1830, being one of the very earliest, if not the earliest, railways to be sanctioned on the first application. Clause XIX. provided "That the said Company of Proprietors shall meet together at the Bell Hotel in Leicester, or at some other convenient place in Leicester aforesaid, within two calendar months next after the passing of this Act."

This meeting was held on June 25th, 1830, when the Directors were appointed as follows:—

Clement Winstanley (Chairman)	.	Leicester.
Isaac Hodgson (Deputy-Chairman)	.	Leicester.
Robert Birkley	.	Leicester.
Benjamin Cort	.	Leicester.
John Ellis	.	Leicester.
James Goddard	.	Market Harborough.
Joshua Grundy	.	Leicestershire.
Thomas Leach	.	Leicester.
William Martin	.	Leicestershire.
Richard Mitchell	.	Leicester.
Richard Norman	.	Melton Mowbray.
Charles James Packe	.	Leicestershire.
Thomas Pares	.	Leicester.
Joseph Phillips	.	Leicester.
Thomas Stokes	.	Leicester.

At a Special General Meeting of the proprietors held at the Bell Hotel, Leicester, September 6th, 1830, 1,639 shares were issued, Nos. 1 to 1,639, of £50 each; the register of proprietors being sealed and signed—"Clement Winstanley, Chairman."

The Company's Act gave power to construct a railway from the navigable part of the River Soar, near the West Bridge, Leicester,



THE SEAL (full size).

to the Hinckley and Melbourne Road at the northward end of the village of Swannington, together with four branches, extending to the Bagworth, Ibstock, and Whitwick collieries, and from the ancient Fosse Road to the North Bridge, Leicester. The three former branches were constructed at the expense of the owners of those collieries, but the North Bridge branch was never made, another branch to Soar Lane being afterwards constructed in lieu thereof. The main line (exclusive of branches) was 16 miles 5 chains in length to the junction with the proposed Coleorton Railway, and 16 miles 12 chains if the coalyard at Swannington be included.

No sooner did Robert Stephenson commence the work of the railway than he formed the opinion that there was coal at Snibston, and requested his father to come over. "Old George" was of the same opinion; he therefore induced his Liverpool friends, Joseph Sanders and Sir Joshua Walmesley, to join him, and in 1831 they purchased land and commenced to make the Snibston collieries.

The better to look after this important work George Stephenson, in 1833, left Liverpool and came to reside at Alton Grange, Leicestershire, and to this fact may be traced several of the railways in the Midlands of England.

The line from Leicester to Swannington was commenced in October, 1830. A large slate slab, forming the doorstep of the railway offices and directors' board room at West Bridge, Leicester, was used as the starting point for measuring distances. Its position on the ground was calculated to be 180 feet above the mean water-level at Liverpool, and hence it was used as the datum for the heights in the construction of the line. Ordinance datum marks are now recorded on buildings all over the country; but at the period when this railway was made they did not exist, and the engineers had accordingly to provide their own datum line from which to work. This datum forms the base-line, and although it is an imaginary one, yet on the contour or profile it forms the horizontal line from which all the vertical heights are measured.

Leaving the West Bridge Station, Leicester, the railway runs past Glenfield, the Groby branch junction, Ratby, Desford, Merry Lees, Thornton Lane, to the old Bagworth Station, thence up a self-acting incline to the incline house and station, then continuing past the junction of the Bagworth Colliery branch, and the Ibstock Junction to the summit at the Staunton-under-Bardon road-crossing, now known as Ellistown. The gradients were severe, but this was of little importance, as they were in favour of the loaded coal trains, the line having risen no less than 391 feet in a distance of 11 miles



WEST BRIDGE STATION, LEICESTER
(Opened July 17th, 1832. Closed March 13th, 1893).

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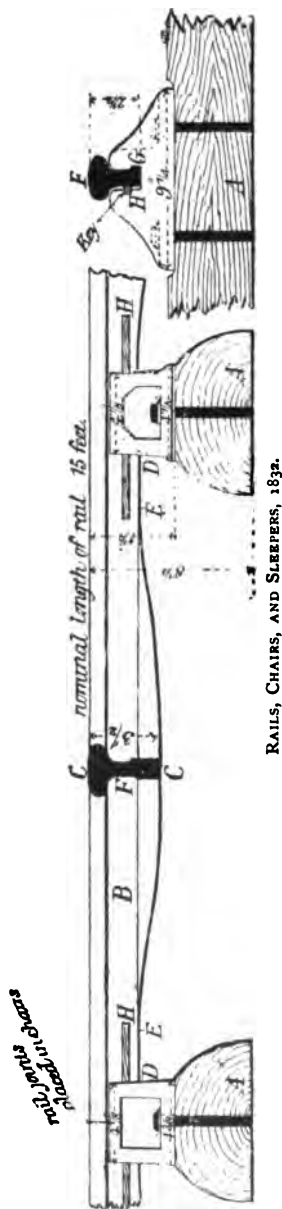
55 chains. Leaving the summit level, the railway passes Ashby Road Station (now known as Bardon Hill), the junctions of the Whitwick and Snibston No. 2 Colliery lines, the Long Lane Hotel and Station (now Coalville), and the Snibston No. 1 Colliery, to the fixed engine at the commencement of the Swannington incline, thence down the incline of 1 in 17 to the junction with the Coleorton Company's line and to the Swannington coalyard. The gradients from the summit to Swannington were so unfavourable that a portion had to be worked by a fixed engine and rope, and the other portion required the most powerful locomotives in existence at that period.



GLENFIELD TUNNEL
(Opened July 17th, 1832).

The principal work on the line was the Glenfield Tunnel, which commenced at a distance of a mile and fifty chains from Leicester. This tunnel is 1 mile and 36 yards in length, straight, level, built of brick, and has a single line of rails passing through it.

The course of this tunnel for more than 500 yards, near the Glenfield end, lay through loose running sand, the presence of which rendered it necessary for Mr. Robert Stephenson to construct a wooden tunnel to support the sand while the brickwork was being erected. So heavy did this work prove that the contractor was ruined, and he was unable to complete it. A second contractor declined to



continue the work, which the Company had themselves to complete at a largely increased cost.

The line was single throughout, except at stations and upon the Bagworth incline, and the gauge was 4 feet $8\frac{1}{2}$ inches, this being one of the few early railways which had the gauge limited outside, the clause in the Act being as follows:—

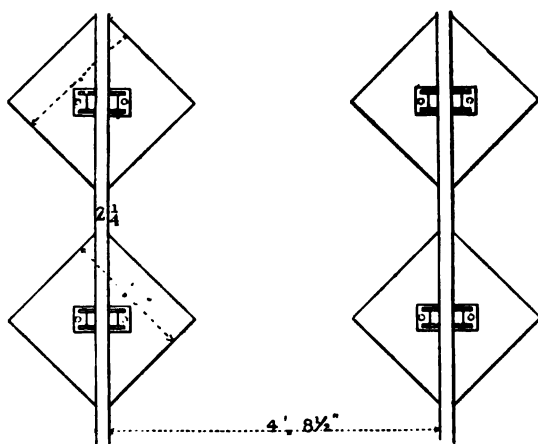
“LIII. And be it further enacted, that the distance between the inside edges of the rails of the said railway shall not be less than four feet eight inches, and the distance between the outside edges of the rails of the said railway shall not be more than five feet and one inch.”

The rails were of wrought iron, of the elliptical, or more generally known as the “fish-bellied” pattern, nominally 15 feet in length, and when new weighed 35 lbs. per yard. They had a single head only, $2\frac{1}{4}$ inches in width, but the most peculiar feature was that the under side of the rail was curved, as shown in the accompanying diagram.

The extreme depth of the rail between the chairs (at C) was $3\frac{1}{2}$ inches, tapering away in a semi-elliptic curve to $2\frac{1}{2}$ inches at the chairs (D). At that time fish-plates were unknown, the rail joints being made in a chair. On the one side of the rail a lateral swell was rolled and continued throughout the whole length of the rail; but on the other side it terminated (at E) before reaching the chair.

The chairs were of cast iron, a cavity being formed in each corresponding to the lateral projection on the rail. On the opposite side a similar cavity was cast for the purpose of receiving a long, thin, wrought-iron key (H), which pressed the projection on the rail into the cavity in the chair, thus preventing the rail from rising upwards.

For $7\frac{1}{2}$ miles upon embankments the chairs were spiked to cross-sleepers (A), these being of oak of half-round section, bound at each end with an iron hoop. In cuttings for $7\frac{1}{2}$ miles the chairs were supported on stone blocks, 20 inches square and 10 inches thick, and through the Glenfield Tunnel the chairs were fastened to longitudinal timbers, held to gauge by cross-ties. It is an interesting fact that fully a mile of "longitudinal timber" road was here in use in the year 1832, or several years before the opening of the Great Western Railway in June, 1838—a fact which demonstrates that longitudinal timbers were first introduced by Stephenson and not by Brunel, as has been claimed.

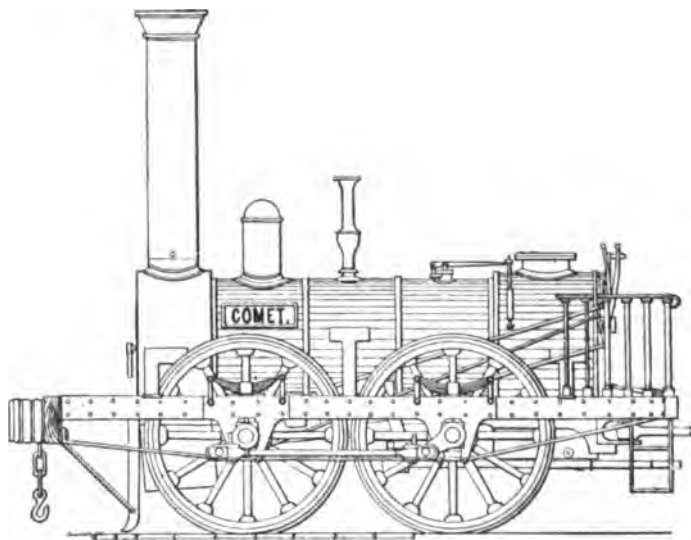


PLAN OF STONE BLOCKS.

It was soon found in practice that the stone blocks "required constant attention—lifting, packing, and keeping to gauge"; also that the riding over them was "harder than on the wooden sleepers." However, some of the stone-block road remained in use on the main line for a period of nearly forty years, and some even exists in sidings at the Swannington end of the line at the present day. The points were all of the old "slide" pattern.

The Bagworth incline was self-acting, the loaded waggons descending by gravity, pulling up the empty ones by means of a rope passing round a wheel at the top. This incline was 43 chains in length, and the gradient 1 in 29, and commenced at a distance of about 10 miles from West Bridge Station. A grooved wheel, 6 feet in diameter, was fixed horizontally in a square space under the rails at the top, round

which a hempen rope, 1,000 yards in length, passed. This rope weighed 2 tons, was 5 inches in circumference, and cost £60. The speed of the two sets of waggons upon the incline was regulated by a man riding on each train, and a brake could also be applied to the large wheel at the top. In the middle of the incline there was a loop,-or passing place, and from this loop to the top there were three rails, the centre one being common to both up and down traffic. The object of this was to account for the width of the wheel and



THE "COMET" OPENED THE LEICESTER AND SWANNINGTON RAILWAY.

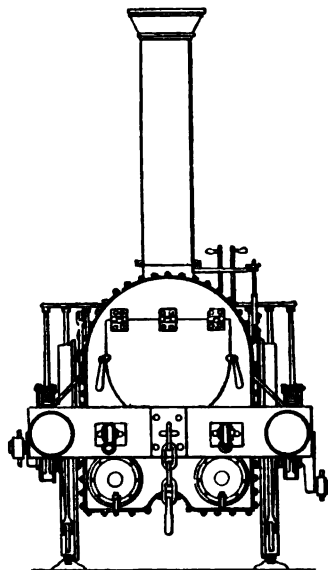
position of the rope ; also to save the cost of a fourth rail, and yet not to have facing points.

The first locomotive engine for this railway was named "Comet," and was built by Messrs. Robert Stephenson and Co., of Newcastle-upon-Tyne. It was shipped by sea from Newcastle to Hull, thence by canal, and as the embankment close to Leicester was not completed, the engine was put upon the rails at the Fosse Road siding, and on the morning of Saturday, May 5th, 1832, handed over to the Company "in steam." To see the starting of the first locomotive which had ever run in the Midland Counties of England was a great event. Mr. John Ellis remarked to his son on that morning, "Edward, thou shalt go down with me and see the new engine get up its steam." Ten

Directors, the Secretary, Treasurer, Manager, Solicitor, and Mr. Robert Stephenson, Engineer and the maker of the engine, were also present.

Several satisfactory runs as far as the tunnel and back having been made, Mr. Stephenson formally handed over the engine with the remark that it was larger and more powerful than any he had previously built.

The Chairman of the Company, Mr. Winstanley, himself then took hold of the "regulator," and ran the party up to the tunnel and back. He then handed the engine over to Mr. Henry Cabry, the Company's "Engine Superintendent," and appointed Robert Weatherburn, an experienced driver, who had come from the Liverpool and Manchester Railway, as the driver of the "Comet."



THE "COMET" (front view).

CHAPTER II.

OPENING OF THE LEICESTER AND SWANNINGTON RAILWAY.

THE preliminary official announcement of the opening of the line was given in the following rather quaint advertisement which appeared in the Leicester newspapers of July 14th, 1832:—

“Leicester and Swannington
RAILWAY.

THE OPENING of the RAILWAY will take place on TUESDAY NEXT, the 17th instant. The Locomotive Engine, with a train of Carriages, will start from the Augustin Friars at 10 o'clock, and proceed to Bagworth; and the Proprietors may be supplied with Tickets on application at the Directors' Room in the Friar-lane, between the hours of 10 and 12 this day.

It will be absolutely necessary that the Line of Railway should be kept clear, and the public are warned that any persons venturing upon it will expose themselves to imminent danger, as well as become liable to the Penalty imposed by the Act, which the Directors, with a view to prevent accidents, will strictly enforce against all trespassers.

By order of the Directors.”

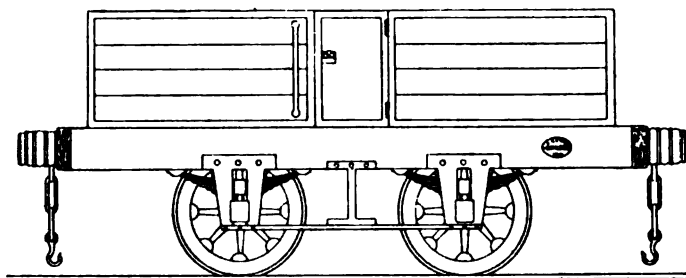
The line was opened amid great rejoicing, ringing of church bells, and the firing of cannon, on Tuesday, July 17th, 1832. The first train drawn by the “Comet” was driven by George Stephenson, assisted by his son Robert and Driver Weatherburn (whose son, by the way, is the Midland Company's present district superintendent at Kentish Town), and ran from West Bridge to the old Bagworth Station, situated at the foot of the self-acting incline known as the “lower end” of the line.

The Company's “open carriage,” as illustrated, with the exception of a special covered vehicle provided for the use of the directors, and in which the chairs from the board room were temporarily placed, was the only passenger vehicle. The carriage “for the use of directors only” was attached next to the tender, and was followed by the open vehicle and ten new coal wagons, across which planks of wood were laid as seats, covered with green cloth.

The train was about sixty yards in length, and was decorated with flags bearing the following inscriptions: "Success to the Leicester and Swannington Railway"; "Cheap coal and granite"; "Warm hearths and good roads"; "We wish our efforts to promote the prosperity of all"; and "May the triumph of science prove the blessing of the people."

One of the vehicles carried a band of music, and the last vehicle of all had a small cannon, which was fired at starting and on approaching each station, and this was the signal for the church bells to be rung at each village on the route.

All the directors of the Company, officials, and about four hundred ladies and gentlemen "who had applied for tickets to enable them to participate in the festivities of the occasion," rode in the train, and it should be specially mentioned that Mr. William Jessop and



OPEN RAILWAY CARRIAGE, 1832.

Mr. James Oakes, who had come to watch the results, and also two or three canal directors, were also present.

The Chairman of the Company having given the hand-signal "Right away," George Stephenson opened the regulator, and there was a general shout, "See, the puffing monster moves!" The band struck up "God Save the King," and the cannon fired. All went well until reaching the middle of the tunnel, when a sudden shock was felt. The train almost came to a stop, and the band instantly ceased to play. "Keep your seats," was the message passed down the train from vehicle to vehicle, "it's only the engine chimney that has caught the top of the tunnel, that is all." The cause of this mishap was that the platelayers had been lifting a low place in the road and had raised it too high, with the result that the engine chimney was knocked down, and the occupants of the open vehicles were for what seemed to them a considerable time kept in the dark in a moist, smoky atmosphere. But upon emerging from the tunnel

a sudden transformation in the appearance of the directors and passengers was strikingly apparent. Owing to the combined effect of the steam and dense smoke, the light bonnets, veils, and dresses of the ladies, and the shirt fronts and faces of the gentlemen, were thickly covered with black spots. Further on a special stop was made at the Glenfield Brook to repair the damaged chimney and to enable the passengers to wash their faces in the stream, which they did, using their pocket handkerchiefs as towels.

On arrival at the foot of the Bagworth incline, which was reached in an hour, the locomotive engine was detached and the train connected to the rope. Loaded wagons having been brought to the top of the incline, they were attached to the other end of this rope, and their greater weight pulled the train up to the "incline house."

The passengers, however, remained at Bagworth at the foot of the incline in order to partake of a cold collation and champagne, provided by the directors of the Company "free of all charge."

The return train started at two o'clock, the passengers having been summoned by bugle call to take their places, the engine conveying not only the train as it started in the morning, but in addition "two wagons filled with coal, and two with stone, sometimes at the rate of more than twenty miles an hour!" The newspapers of the period also add that the train got back to Leicester at three o'clock "without any accident except a woman being ridden over alongside the railway by a cavalier who was trying to keep up with the train."

Except for the one little mishap in the tunnel, a very pleasant trip was made, and the passengers were delighted to know that they had travelled twenty miles behind an engine and brought the first coal to Leicester by rail.

On arrival at three o'clock a horse and cart was in readiness, coal was unloaded at once, and the band, headed by flags, followed by the cart of coal and the visitors, marched from the West Bridge Station to the "Bell," where "there was a grand dinner."

Throughout the day there was a very downcast look upon the faces of the Erewash Valley gentlemen and the canal directors present, so much so that some of the party playfully remarked, "Jessop, don't look so down, old man." "Oakes, what in the world is the matter with you?"

The engine and carriages conveying ordinary passengers made a second trip to Bagworth later in the afternoon, starting at 4.30 p.m., and returned with a dozen wagons of coal, which were attached to the rear of the passenger train.

A paragraph in the *Leicester Chronicle* of the period, and merely headed "Railways," says: "Since the public opening on Tuesday an additional carriage for passengers has been added to the train, and numbers of respectable parties have availed themselves of the opportunity to visit Bagworth and its neighbourhood. On Wednesday upwards of 200 passengers went by the conveyance, who speak in high terms of the treat which they experienced." Further, the same paper says: "We are glad to find that the directors have commenced with a moderate rate of fares, which, we understand, is as follows:—To Glenfield 4*d.*, to Ratby 6*d.*, Desford Lane 8*d.*, Mary Lees 10*d.*, Thornton and Bagworth 1*s.*" The *Leicester Chronicle*, July 28th, "understands that these fares permit of return also." "Nearly 400 [passengers] went at different times on Wednesday" (25th). "About half-past six last evening the train consisted of 17 carriages, 5 of which were loaded with coal, 4 with granite, and 8 with passengers. Owing to the great demand for coal the train again set out for Bagworth at half-past seven o'clock." "Bagworth coal could be got in Leicester at 1*s.* per ton in consequence of the railway."

At the date of the opening there were three empty wagon trains a day leaving Leicester at 8 a.m., 1 p.m., and 4.30 p.m., to which a passenger carriage was attached, returning behind the coal trains. The passenger fares charged were 1½*d.* per mile. There was one class only, and passengers stood up in an open carriage, generally known as a tub. It was nothing better than a high-sided goods wagon, and had neither top, seats, nor spring buffers.

The tickets issued to the various stations were of brass, of octagon form, as shown in the accompanying illustration. The guard of the train carried a leather bag, something in the form of a collecting-box, having eight separate divisions—one for each station. At the end of each passenger's journey the ticket was placed in the bag by the guard, to be returned, recorded in the books, and used again. These brass tickets remained in use for the "open carriage passengers" from 1832 to 1846.

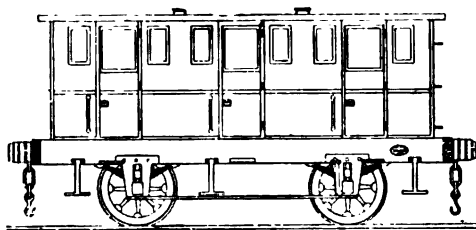
Immediately after the opening of the line it became apparent that "one class" was not sufficient, and orders were at once given for the construction of a first-class carriage. This was built at the West Bridge wagon shop by the Company's men. It had three compartments,



BRASS TICKET
(In use 1832-1846).

weighed two and a half tons empty, and the length of the frame was 17 feet. The first-class fare for riding in this vehicle was $2\frac{1}{2}d.$ per mile, and the tickets for which were of paper, the name of the station and the name of the passenger being filled in by the booking-clerk. The first-class passengers were also allowed to book their seats some days in advance. This system of booking was many years ago abolished, but to this day, when we go to a station to get a "ticket," we say we are going to the "booking-office."

The system of signalling was of a primitive character, hand-signals, flags, and hand-lamps being employed. At each intermediate station, and also at the Stag and Castle Inn, Thornton, a pole was erected, upon which a red flag or red lamp was hoisted whenever it was necessary to stop a train to pick up passengers or to attach wagons, and the



FIRST-CLASS CARRIAGE, 1832.

absence of the "stop signal" was an intimation to the driver to proceed on his journey.

It may be wondered why a signal-pole was put up at the Stag and Castle Inn, that not being one of the Company's stations. The explanation is a very simple one. The passengers having complained that they could get no refreshments at the Bagworth Station, they were therefore allowed to walk down to the inn, and by order of the manager the train would stop to pick up passengers when the innkeeper pulled up the "stop signal."

In August, 1832, when the second engine—the "Phoenix"—arrived, it became necessary to avoid trains meeting upon the single line, and they therefore followed each other about fifteen minutes apart, and to avoid collision in the tunnel a fifteen-minute sand-glass was employed at Glenfield Station and another at the tunnel house. When one train entered the tunnel the glass was turned, and if a second arrived within fifteen minutes it was stopped by means of a flag or by a candle placed in the window of either the Glenfield Station or the tunnel house, and

the absence of the flag or candle was the signal to go into the tunnel. At the tunnel house, it should be mentioned, the wife of a platelayer attended to the sand-glass and lighted the candle.

Lord Stamford, in 1831, commenced a branch line over his own land at his own expense to connect his granite quarries at Groby with the Swannington Railway, and in the following year George Stephenson, Joseph Sandars, and Joshua Walmesley constructed a line to their Snibston No. 2 Colliery at Coalville, and in 1832 Sir George Beaumont commenced the Coleorton Railway from the junction at Swannington



GLENFIELD STATION
(Opened 1832).

to the ancient Ashby tramroad, thus placing the Leicester and Swannington, Coleorton, and Ashby lines, also the Ashby Canal, in direct communication. It is interesting to note that in each of these three cases the work was well in hand before any application was made to Parliament for Acts.

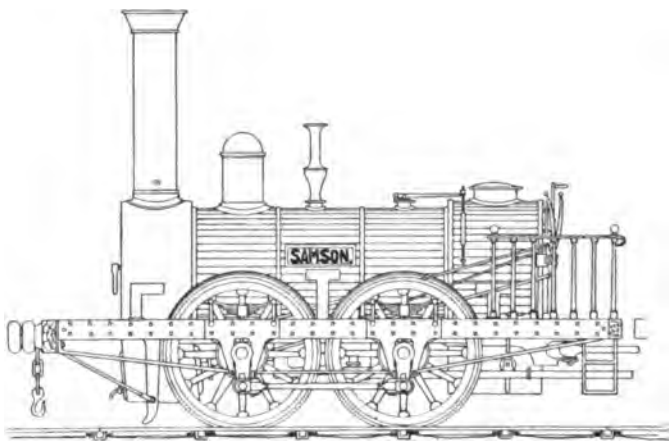
At a meeting held at the "Bell" on January 14th, 1833, shares were issued from 1,640 to 1,800, but it was found that in five cases the calls had not been paid up.

Mr. Roger Miles, the clerk to the Company, therefore the same day wrote to the holders of the five shares, Nos. 1,692, 1,698, 1,699, 1,700,

1,748, "I am therefore necessitated to inform you that unless the sum of £2 is paid on or before the 22nd instant, your name will be furnished to one of the principal and most pressing creditors of the Company." As a fact there were no pressing creditors, but the letter had the desired effect, and the money was paid with an explanation that the notice to pay had been overlooked.

Another new engine, the "Samson," was placed on the line, and one of the first events in its history was to bring about the introduction of the first "steam trumpet."

On Saturday, May 4th, 1833, Driver Weatherburn reported to the Engine Superintendent, Mr. Cabry, that "when driving the engine



THE "SAMSON," 1833.

'Samson' on the first train this morning, on approaching the level crossing of the road from Bagworth to Thornton at a point close to the Stag and Castle Inn, I observed a horse and cart approaching. I blew the horn, lifted the 'safety valves,' and opened the cylinder taps, but failed to attract the attention of the man in charge of the covered cart. The horse passed over the rails, but the left-hand buffer of the engine caught the back corner of the cart. The horse was so injured that it had to be killed, but the driver of the cart, although thrown out, was not much hurt. The cart and contents were completely smashed up."

Upon hearing the facts, Mr. Cabry asked, "Were the gates shut across the road?" "Oh, no," replied the driver, "they were wide open, and I saw nothing of the gatekeeper." The matter was at

once reported to the Manager, Mr. Ashlen Bagster, who informed Mr. Roger Miles, the clerk to the Company, and Mr. John Ellis, one of the directors. At their suggestion, by the next train on the same day, Mr. Bagster went over to Alton Grange to report the circumstance to Mr. George Stephenson, who was the largest shareholder in the line. After various ideas had been considered, Mr. Bagster remarked, "Is it not possible to have a whistle fitted on the engine which steam can blow?" to which George Stephenson replied, "A very good thought; go and have one made."

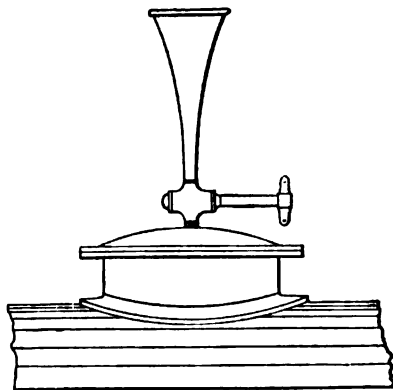
Mr. Bagster at once went to a musical instrument maker in King Street, Leicester, who constructed a "steam trumpet," which was put on in ten days, and tried at West Bridge Station in the presence of the Board of Directors.

Similar trumpets or whistles were ordered for the other engines, and one was also sent from Leicester to the Liverpool and Manchester Railway.

The owner of the cart put in a claim against the Company for a new horse and cart, and for fifty pounds of butter and eighty dozen eggs, which he was conveying to Leicester market, and as the person who should have closed the gates was clearly to blame and neglected that duty, the Company's solicitors, Messrs. S. and R. Miles, advised that the claim should be paid, and that course was adopted by the directors.

These trumpets were the first instruments or appliances ever used on locomotives in any part of the world to give notice by steam whistle or sound of the approach of a train or engine. The trumpet had, of course, a steam tap, and was, according to the official diagram signed by the Company's Engine Superintendent, 1 foot 6 inches high and 6 inches diameter at the top.

During the year 1833 the portion of the Leicester and Swannington Railway which extends from the summit near Bagworth to the top of the Swannington incline, known as the "Upper End," was opened by the "Samson," and was driven upon this occasion by Robert Stephenson. As the traffic was small, a composite carriage was ample for the passenger traffic on this section of the line.



THE FIRST STEAM TRUMPET, 1833.

The Railway Company did not build stations at Ashby Road (now Bardon Hill) nor at Long Lane (now Coalville), but in each case used a room in the "Railway Hotels," where passengers obtained their tickets and waited for their trains.

The Swannington incline, which commences at a distance of



HOTEL, "LONG LANE"

(Used also as a Passenger Station, 1833 to July 31st, 1849).

15½ miles from Leicester, was in 1833, and is to-day (1901), worked by a stationary engine and rope.

By an Act of June 10th, 1833, the Company obtained powers to make the Soar Lane branch at Leicester and to raise £10,000 in shares and £15,000 on loan, so as to compete, if necessary, on advantageous terms with a rival line which was then proposed from Pinxton to Leicester.

This branch crosses the canal by a curious drawbridge, designed by Mr. Robert Stephenson. It was built in 1833-4, and is still in use,

the movable part being raised and lowered by means of chains at the four corners passing over pulleys and attached to counterweights.

The large increase in the coal traffic necessitated the use of more powerful engines to convey the trains upon the rising gradients of 1 in 251 and 1 in 190 between the top of the Swannington incline and the top of the Bagworth incline. Mr. Stephenson decided to construct a powerful engine, the "Atlas," having six coupled wheels, and it was put to work in February, 1834. This was the sixth engine sent to this line from the Newcastle works. However, in 1833 some



SWANNINGTON INCLINE
(Opened 1833, and still in use, 1901).

members of the "Liverpool party" pressed upon the directors that the Lancashire firms of Bury and Co., Tayleur and Co., and the Haigh Foundry Company should have orders, but Mr. Stephenson being the largest shareholder, they appeared to have felt anxious to know his opinion. It was therefore decided to write a private note on the subject, to which George Stephenson wrote the well-known reply, "Very well, I have no objection; but put them to this fair test—hang one of Bury's engines on to one of mine, back to back, then let them go at it, and whichever walks away with the other, that's the engine."

The order was given to Mr. Bury in 1833, who personally assured the directors that "whatever Stephenson's engine could do his could do," and the engine named the "Liverpool" was placed upon the line

in July, 1834, when a series of practical trials was made with a train of wagons in the presence of the directors. However, Mr. Bury was ultimately obliged to admit that his engine, the "Liverpool," was not equal to taking the train conveyed by Stephenson's "Atlas." Turning to Mr. Bury, Mr. John Ellis remarked, "That being so, why didst thou say that whatever Stephenson's engine could do thine own could do?" To this question no answer was made.

In June, 1837, this Company obtained power to raise a further sum



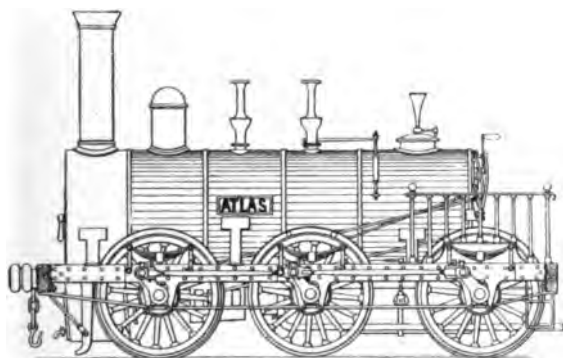
WINDING ENGINE, SWANNINGTON INCLINE, 1833
(Still at work).

of £40,000 by the issue of new shares, in order to pay off all bonds and securities which then existed for the sum of £35,000, the remaining £5,000 being required for new engines and works.

On December 27th, 1837, the capital was raised to 2,800 shares of £50 each, or £140,000, and all loans and bonds paid off.

The cost of constructing the main line of railway was equal to £7,970 per mile. The books show that for the three years ending December, 1839, the average profit was £8,648, being equal to 6·17 per cent. on the capital. The maintenance of way, which was undertaken by a contractor, was during that period equal to £130 14s. per mile. The locomotive power and repairs of engines amounted to £2,099 13s. 2d. per annum.

The wives of platelayers and others on this line were important persons in several cases, living rent free in the Company's houses on condition that they acted as gatekeepers, and Mrs. Argyle, the wife of the platelayer at Merry Lees, was "stationmaster," booking-clerk, porter, and she also worked the signals to stop the trains. She assisted when wagons were shunted into the siding, and managed the whole station from July 17th, 1832, to February 28th, 1871, when it was closed. The author has repeatedly seen her go up the ladder of the home-signal and light the lamps as well as any man.



STEPHENSON'S "ATLAS," 1834.

It is worthy of note that the Loughborough Canal shares, upon which £142 17s. 0d. had been paid, were, previous to the opening of the Swannington Railway, worth £4,500 each, but to-day they can be purchased for £135. The Erewash Canal shares, upon which £100 were paid, sold for £300, but can now be had for £50; and the Leicester Canal £140 shares are standing at £60.

To stem, if possible, the tide of adversity and to compete on better terms with the railway company, the Leicester Navigation Company in 1833 gave parliamentary notice to construct a railway system from Loughborough to all the collieries in the Leicestershire district, but these proposals were never carried into effect.

CHAPTER III.

THE MIDLAND COUNTIES RAILWAY

MR. WILLIAM JESSOP and Mr. James Oakes, who had been deputed, as we have already seen, to attend the opening of the Leicester and Swannington Railway on July 17th, 1832, immediately after that event made a full report to the Derbyshire and Nottinghamshire coal owners, and a month later, namely on August 16th, 1832, a meeting was held at the Sun Inn, Eastwood. Mr. Jessop reported that Leicestershire coal was being sent by train to Leicester in large quantities, and was being sold at under 10s. per ton; also that their own trade in the Leicester district was completely ruined. He stated that to compete with the Leicester and Swannington Railway the price of their coal in Leicester must be reduced 3s. 6d. per ton. The coal owners had met the canal companies and urged them to reduce their rates 3s. a ton, the price of the coal to be lowered 1s. per ton. On the other hand, the canal companies would only agree to lose 1s. 6d., and considered that the coal owners should reduce their price 2s. per ton. After two hours' consultation nothing further could be arranged, both sides considering their offers as final, and neither would give way in the least.

When these facts were reported to the coal owners at the Sun Inn, Eastwood, on August 16th, 1832, they not only resolved to reject the offers of the canal companies, but also unanimously passed a resolution that "There remains no other plan for our adoption than to attempt to lay a railway from these collieries to the town of Leicester," and a committee of seven members was elected to carry the resolution into effect. The Sun Inn at Eastwood is consequently the birthplace of the Midland Counties Railway.

The original scheme was simply to make a line from the old Mansfield and Pinxton Railway at Pinxton to Leicester, and the Derbyshire and Nottinghamshire coal masters put down their names for a considerable part of the capital, but they were unable to raise the money required. The Secretary, Mr. Fox Bell, therefore made a journey to

Manchester, Leeds, Liverpool, Derby, and other towns and laid the case before the rich men known as the "Liverpool party."

Some members of the "Liverpool party" then paid a visit to the district, and decided that a local single-line railway was not in accordance with their wishes. A line from Pinxton to Leicester they regarded as too fragmentary and incomplete, as it did not form a link in the great "chain" which they desired to establish between London and the north. It must be remembered that in 1833 an Act was obtained to make the London and Birmingham Railway, and the "Liverpool



THE SUN INN, EASTWOOD
(Birthplace of the Midland Counties Railway).

party" insisted that the proposed Pinxton and Leicester line must be continued forward from Leicester to Rugby to form a junction with the London and Birmingham Company's system; also that it should extend from near the river Trent to Derby to form a junction with the proposed "North Midland line from Derby to Leeds, and that there must be a branch from Trent to Nottingham."

The proposed railway would thus become a main line from Rugby to Derby, having a branch to Nottingham, and another branch from near Long Eaton passing Pye Bridge to Pinxton would form a junction with the old Mansfield Outram plateway.

The "Liverpool party," who were providing the bulk of the capital, felt that they were entitled to call the tune, and they determined that they would only give their support to the scheme on the distinct condition that their extended proposals were carried into effect, and that the Pinxton and Leicester line should blossom into the Midland Counties Railway.

A number of meetings were held in support of the project, when Mr. Fox Bell pointed out that surveys had been made of the intended lines between Derby and Leicester and Derby and Nottingham and part of the line from Leicester to Rugby. The latter portion of the survey was then being completed, and a very influential committee had been formed in Leicester. The coal owners of Derbyshire and Nottinghamshire had taken shares to the amount of £50,000 in the original project, which amount would now be thrown into the present undertaking. Mr. Bell also read the draft of a prospectus, in which it was estimated that a capital of £600,000 would be ample. The receipts expected included:—

	£
Coaching, parcels, etc.	77,870
Heavy goods, now sent by canal and road	8,288
Coal, minerals, timber, <i>linen</i> , grain, etc.	16,309
	<hr/> 102,467
Deduct working expenses	37,250
	<hr/>
Leaving a net surplus of	65,217
Add probable increase of coaching, etc.	40,620
" " goods and coal	8,160
	<hr/>
Total net profit	£113,997

The carriage of coal to Leicester, then 5s. 2d. to 6s. per ton, would be reduced to 2s. 9d. or 3s., bringing the selling price down from 12s. or 15s. to from 8s. to 11s. per ton. A Nottingham committee was also formed, comprising several county magistrates and other influential men. The same month, November, 1833, it was stated that Mr. Rennie, the engineer, had personally inspected the whole of the intended line from Rugby to Leicester, Derby, and Nottingham, with the branch to Pinxton, and thought very favourably of it.

In November, 1833, parliamentary notices were lodged for the line from Pinxton, Derby, Nottingham, and Leicester to Rugby, and the following abridged prospectus was afterwards issued :—

MIDLAND COUNTIES RAILWAY.

PATRONS.

The Right Honourable the Viscount Melbourne.
The Right Honourable the Earl of Denbigh.

PROVISIONAL COMMITTEE.

LEICESTERSHIRE.

Colonel Cheney, C.B.	Joseph Noble, Esq., M.D.
Charles William Packe, Esq.	John Bright, Esq.
Matthew Babington, Esq.	James Brookes, Esq.
Thomas Edward Dicey, Esq.	John Needham, Esq.
William Heyrick, Esq.	Mr. Toone.
Richard Gough, Esq.	Mr. Hackett.
John Hill, Esq., M.D.	Mr. C. B. Robinson.

Mr. Alfred Burgess.

NOTTINGHAMSHIRE.

Lancelot Rolleston, Esq.	William Trentham.
John Musters, Esq.	Thomas Barber, Esq.
John Wright, Esq.	Samuel Parsons, Esq.
John Coke, Esq.	Richard Renshaw, Esq.
Francis Wright, Esq.	H. B. Campbell, Esq.

William Wilson, Esq.

DERBYSHIRE.

Edward Miller Mundy, Esq.	Samuel Fox, Esq.
William Palmer Morewood, Esq.	Henry Chapman, Esq.
William Leaper Newton, Esq.	Mr. John Wright.
John Boden, Esq.	Mr. John Sandars.
Edward Soresby Cox, Esq.	Mr. William Baker.
James Oakes, Esq.	Mr. Byng.
Douglas Fox, Esq.	Mr. Tunncliffe.

BANKERS.

Leicester : Messrs. Mansfield and Babington.
Nottingham : Messrs. I. and I. Wright and Co.
Derby : Messrs. Crompton, Newton, and Co.
Mansfield and Chesterfield : Messrs. Maltby and Robinson.
Rugby : Messrs. Butlin and Son.
London : Messrs. Smith, Payne, and Smith.

SOLICITORS.

Nottingham : Messrs. Leeson and Gell.
Leicester : Messrs. Berridge, Berridge, and Macaulay.
Derby : Messrs. Mousley and Barber.

ENGINEERS.

George Rennie, Esq., and William Jessop, Esq.

SECRETARY.

Mr. John Fox Bell, Leicester.

Capital £600,000.

In 6,000 shares of £100 each. Deposit £2 per share.

Application for shares to be made at the respective banks, or (if by letter post-paid) to the Secretary.

This railway is intended to connect the towns of Leicester, Nottingham, and Derby with each other and with London, a junction for this latter object being designed with the London and Birmingham Railway near Rugby. A branch will also extend to the Derbyshire and Nottinghamshire collieries, and to the termination of the Mansfield Railway at Pinxton. From a very careful estimate of the sources and amount of income on this railway, it appears that a clear annual return of 20 per cent. may be expected from the capital invested in it.

A prospectus with Plan and Section of the Line has been published, which, with Mr. Rennie's Report thereon, may be had on application to the Bankers and Solicitors above named, or to the Secretary, if by letter, post-paid. The requisite parliamentary notices have been given, and plan and books of reference have been deposited with the Clerks of the Peace for the respective counties agreeably to the standing orders of the two Houses of Parliament.

It is expected the whole of the routes northward of Leicester may be completed within two years after the Act is obtained, and the remaining portion to Rugby by the time the London and Birmingham Railway is opened.

Subscribers will not be called upon for more than 5 per cent. at one Instalment, nor for Instalments at shorter intervals than three months.

November, 1833.

The Midland Counties Company also suggested, or (perhaps unfortunately for itself) let it be known that at some future time it intended to extend this Pinxton branch from Pye Bridge junction along the full length of the Erewash Valley, and join the "North Midland" at Clay Cross or Chesterfield, thus threatening to take some of the traffic which belonged to the North Midland route. This caused the North Midland Company to oppose the bill, and the powerful canal companies in the district also threw in their influence against the scheme. The North Midland Company, in order to defend itself, caused or suggested the formation of another railway company, the "Birmingham and Derby," to form a junction with the London and Birmingham Railway at Hampton, thus obtaining for itself an independent route to London without having to rely upon the Midland Counties.

So great was the opposition to the Midland Counties' Bill when it eventually came before Parliament in 1836 that it became evident that it would be lost, and the "Liverpool party" therefore decided that the Pinxton branch must be entirely dropped in order to save the measure. This alteration proved successful, and the Act for making the Midland Counties Railway from Rugby to Leicester, Derby, and Nottingham received the Royal Assent on June 21st, 1836.

The Midland Counties was one of the very first lines in the kingdom which was constructed without the aid of George Stephenson, and the

absence of his master hand and mind was very conspicuous. The engineers employed lacked Stephenson's resources and experience, and they failed naturally to command the same degree of confidence or that "inflow of capital" which were so essential to the rapid inauguration and completion of the works. First designed in 1832 by Jessop, in 1833 George Rennie was called in to re-survey and confirm Jessop's route; parliamentary notices were lodged the same year, but the requisite financial support was not forthcoming to justify further procedure; the parliamentary notices were repeated in 1834; a re-survey was advocated in 1835; Charles Vignoles, another engineer, was called in and became engineer of the line in August, 1835; altered plans were lodged in Parliament in November of the same year; a new route to Northampton was advocated in February, 1836; an Act was finally obtained in June, 1836, but part of the scheme was kept in a state of suspended animation by direction of Parliament till August 1st, 1837. That, with the advocacy of first one scheme and then another by various parties, accounts for the very protracted delay from 1832 to 1837.

The Erewash Valley coal masters, by whom the scheme was first suggested, found themselves "completely bested," as one of them remarked—the very Pinxton branch, which was to them the sole object of the line, and for which they fought so hard, was lost. They held a meeting, passed resolutions, and expressed their views in very strong terms, but they could do nothing beyond close the meeting and retire to an excellent dinner at the Sun Inn.

The three canal companies and the coal owners afterwards condoled with each other, and heartily regretted that they did not come to terms in 1832, and thus have avoided the introduction of the new railway.

The Midland Counties Railway Company held its first annual general meeting at Loughborough, on June 30th, 1837, when Mr. Thomas Edward Dicey, the Chairman, presided; and the Board of Directors at that time consisted of no less than twenty-four members, namely Matthew Babington, Charles William Packe, Joseph Frederick Ledsam, William Wilberforce Pearson, Francis Wright, Joseph Smith, William Jessop, Theodore Woolman Rathbone, Edward Cropper, Charles Stewart Parker, Richard Cheslyn, Edward Miller Mundy, Lawrence Heyworth, Edward Dawson, Thomas Edward Dicey, John Coke, John Horsfall, James Oakes, Joseph Walker, George Barker, John Bright, Thomas Toone, William Hackett, and Joseph Cripps.

The original route at first suggested by Mr. Jessop was not exactly followed, and Mr. Vignoles, when appointed engineer, was instructed to prepare the plans for Parliament as though no other engineer had been over the ground.

After Mr. Vignoles had decided upon the route, and during the time the Bill was before Parliament, the inhabitants of Northampton, backed also by those of Market Harborough, made a vigorous attempt to induce the Company to abandon the Leicester and Rugby part of their scheme, and to make a line from Wigston to Market Harborough, thence direct past Northampton to join the London and Birmingham Railway at Roade. A clause was therefore placed in the Company's Act of June 21st, 1836, "That the said Company shall not use or exercise any power, privilege, or authority, given by or contained in this Act, with respect to the portion of their line lying between Rugby and the point where the Midland Counties Railway passes from the parish of Wigston Magna into the township of Knighton, until the first of August, 1837, or the last day of the then Session of Parliament, should Parliament be then sitting, whichever may last happen."

This embargo on the commencement of the works was unfortunate, as it prevented the junction at Rugby being opened so soon as otherwise would have been the case, and it enabled a rival line to previously open its junction with the London and Birmingham at Hampton. Ultimately it was found that the route *via* Northampton would have heavy gradients upon the Kibworth Bank, and also that it would be of no use for traffic from Leicester to Birmingham and the west.

After all this delay the junction at Rugby as originally sanctioned was made, and the Northampton scheme abandoned.

The formal opening of the first portion of this railway took place on May 30th, 1839, when the directors and about five hundred visitors made the first trip over the direct line from Nottingham to Derby, a distance of 15½ miles, and after waiting an hour the train returned and made a second trip to Derby and back.

The object of starting the opening train from the Nottingham end of the line was that the station was completed, and the absolute property of the Midland Counties Company, whereas at Derby the line terminated at Derby Junction with the "North Midland," and at the time there was only a temporary wooden platform, the new station being then under construction. The opening for public traffic was on June 4th, 1839.

The three companies, the "North Midland," "Midland Counties," and "Birmingham and Derby Junction," all of which obtained Acts in 1836, decided and agreed that one large passenger station should be constructed at Derby for the joint use of the three companies.

This station was built by Mr. Jackson for the North Midland Railway Company, the other two companies paying rent at the rate

of six per cent. on the proportion of the cost of that portion which was for their accommodation, and the Midland Counties Company paid for running over the canal bridge north of Derby Station, by which arrangement the cost of a second bridge was saved.

Locomotive sheds and shops were provided for the use of each of the three companies upon the eastern side of the Derby passenger station, while the Midland Counties carriage and wagon shops were at Leicester.

The engines used on this railway were the well-known four-wheeled design of Messrs. Bury and Co., of Liverpool.



NOTTINGHAM STATION, 1839
(Midland Counties Railway).

The second portion of this railway, extending from Trent Junction to Leicester, including two curves joining the Nottingham and Derby section at Long Eaton and Sawley junctions, was opened on Monday, May 4th, 1840.

The *Leicester Chronicle* of May 9th, 1840, describing the opening, says: "About twelve o'clock on Monday last (May 4th) four first-class and six second-class carriages reached the station in Leicester from Nottingham, preceded by the "Leopard" steam-engine. Several directors residing at Derby and Nottingham and Messrs. Vignoles, Woodhouse, and other principal engineers, surveyors, and contractors of the railway came along with them. Great numbers of spectators of all classes had assembled at the station and along the line to

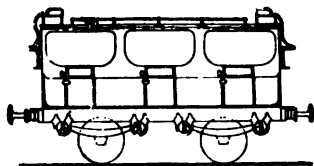
witness their arrival. After waiting about an hour they resumed their seats. Mr. W. E. Hutchinson, the Superintendent of the railway, and Mr. J. F. Bell, the Company's Secretary, having also taken their seats, and three guards, in new uniforms, also occupied theirs on the roofs of the carriages, the signal for starting was given, and the train set out in good style for Derby; a beautiful banner and a number of flags on each side of the carriages adding not a little to the interest of the scene. The journey was one of inspection of the line previous to the public opening, and, we understand, gave great satisfaction to the directors. After dining together at the King's Head Inn, Derby, the party set out on its return to Leicester, and reached the station soon after nine o'clock."

The opening for public traffic took place on May 5th; but it was not before May 20th that six wagon-loads of Clay Cross coal were conveyed to Leicester Station from Stephenson and Co.'s colliery. This was the first consignment of Derbyshire coal by railway, and it was sold at Loughborough at 11s. and at Leicester for 12s. per ton.

Leaving Trent Junction for the south, the line passes over the River Trent by a cast-iron bridge of three arches, each 100 feet span, the iron work being made by the well-known Butterley Company, and immediately enters the short Red Hill Tunnel.

At Leicester a handsome station was opened, which had the directors' board room and the general offices upon the upper floor. There was only one platform, which, by means of a platform loop-line and a junction at either end and crossover roads in the centre, did duty for both up and down passenger traffic, the two main lines being thus left clear for through traffic. This original station, with enlargements, remained in use until the splendid new station was opened on June 12th, 1892.

The third and last portion of the railway, extending from Leicester to Rugby, was constructed by Mr. McIntosh, contractor, and on May 18th, 1840, when only one line of rails had been completed, a special train, drawn by the engine "Vivid," conveyed the directors from Leicester to Rugby and back, and the completed railway was formally opened on Tuesday, June 30th, 1840, by a special train containing the



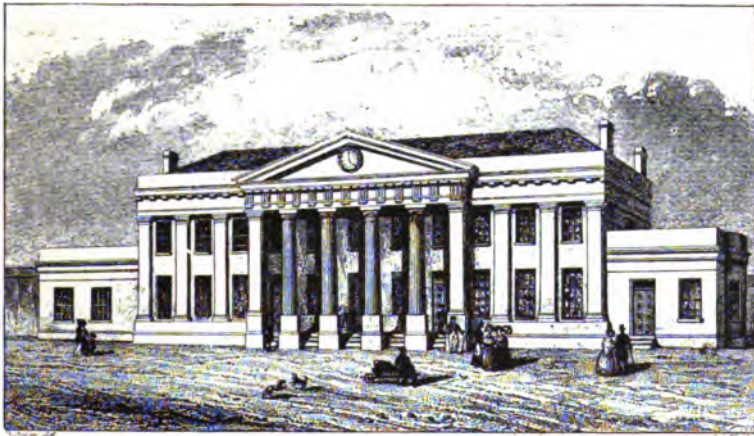
SECOND-CLASS CARRIAGE, 1844
(Midland Counties Railway).

directors, engineers, contractors, and visitors. For public traffic the line was opened on July 1st, 1840.

Leaving Leicester the line passes under the short Knighton Tunnel,

over the Knighton Viaduct, past Wigston and over the Crow Mills Viaduct, thence to Gill's Corner Tunnel, near Ullesthorpe, and near Rugby passes over the Avon Viaduct, which consists of eleven semi-circular arches of brick, each having a span of 50 feet, the height of the viaduct being 40 feet. At Rugby the Company provided one "bay platform" for its trains in connection with the London and Birmingham station, the goods lines being extended past the passenger station to a second junction, which was formed at the $82\frac{1}{2}$ mile post from Euston Station, London.

The Company's main line, extending from the south of Rugby Station to Derby Junction, was $49\frac{1}{2}$ miles, the line from Trent Junction



LEICESTER STATION, 1840
(Midland Counties Railway).

to Nottingham $7\frac{1}{4}$ miles, and the direct line from Long Eaton to Sawley fully a mile. Therefore the total length of main line was $57\frac{3}{4}$ miles.

The railway was upon a gauge of 4 feet $8\frac{1}{2}$ inches, having both up and down lines throughout, the ruling gradient being 1 in 330. The rails were double-headed, five yards in length, and weighing 77 lbs. to the yard; they were placed in chairs and secured by wooden keys, the rail ends being held in a joint-chair.

On embankments the chairs were placed upon sleepers, and in cuttings stone blocks were employed, and upon the Avon and Knighton viaducts continuous longitudinal timbers and bridge rails were used.

The whole of the arrangements in connection with the three openings of this railway were carried out by Mr. William Evans Hutchinson, a druggist, of 16, Gallowtree Gate, Leicester, who was appointed Manager and Superintendent of the line, and so well did he perform these duties that he was asked to become a director; and when in July, 1840, he resigned his position as an official, he was presented by the Company with £500 in acknowledgment of his special services. He afterwards also became a director of the Leicester and Swannington; he was one of the original directors of the Midland, and finally attained to the highest post of all—the Chairmanship of the Midland Railway.

The opening of the Midland Counties Railway through to Rugby, on July 1st, 1840, was the signal for the commencement of war against the Birmingham and Derby Junction Company in order to obtain the traffic which this Company regarded as its own. However, to appreciate the merits of the dispute, due regard must be had to all the circumstances attending not only the construction of the Birmingham and Derby Junction Railway, but also to the war of rates which followed, as dealt with in a later chapter.

Soon after the opening of the Midland Counties Railway some remarkable excursion trains were run, which, in view of the subsequent great development of that branch of railway working, are of great importance. Four especially noteworthy excursions were run, two from Nottingham to Leicester, the first on Monday, July 20th, 1840, and the second on Monday, August 24th of the same year; and two from Leicester to Nottingham, the first on Monday, July 27th, 1840, and the second on Monday, August 10th in the same year.

These excursion trains are of very great importance in railway history for this reason, that they are the first trains of this character ever run on English railways. A great deal of controversy has been waged as to the origin of this class of traffic, due, no doubt, in a large degree to the subsequent developments which have taken place in all parts of the world. In order to establish the fundamental facts of the case and to place the matter beyond all future cavil or question, it is necessary to give the official announcements regarding these trains.

The first of these excursions was brought about by a very successful industrial exhibition which was held at Leicester in 1840, which attracted great attention, especially in the neighbouring town of Nottingham.

On Friday, July 10th, 1840, an announcement appeared in the *Nottingham and Newark Mercury* to this effect:—

"The Committee of the Nottingham Mechanics' Institution have resolved to visit Leicester Exhibition, with their friends, on Monday week, July 20th. The names of persons wishing to be of the party will be received at the Exchange Room, a special train having been arranged by the directors to convey them."

It will be observed that in view of the "new experiment" the Committee took the preliminary precaution of securing the names of passengers before they gave their guarantee to the Company. The response having proved satisfactory, the arrangements were completed, and the excursion was accordingly run on July 20th, 1840.



THE AVON VIADUCT, NEAR RUGBY, 1840.

An exhibition of a similar character was held at Nottingham, and accordingly the Leicester Mechanics' Institute—for these organisations were very distinctive educational and social factors in the great towns of England at that period—resolved on a return visit to Nottingham by means of the new system of special trains which the Nottingham Mechanics' Institute had the honour of inaugurating. This return visit took place on Monday, July 27th, 1840.

The success of this system of travelling "at half the usual charges" and conveying large numbers of passengers having thus been demonstrated as a new and very valuable source of income, led to its adoption by the Midland Counties Railway Company on its own behalf. The Company accordingly advertised the first train from Leicester to Nottingham on August 10th, 1840, and in view of the fact that this was the first train of this character ever run by a railway company, the

formal announcement becomes of great historic value and interest. It was as follows:—

MIDLAND COUNTIES RAILWAY.

THE Public are respectfully informed that a SPECIAL TRAIN will leave the Station at Leicester, on MONDAY MORNING NEXT, the 10th instant, at nine o'clock, for NOTTINGHAM, and return from the Nottingham Station at six o'clock, calling each way at Syston, Sileby, Barrow, and Loughborough, for the conveyance of Persons visiting Nottingham.

Fares to Nottingham and back.

	First Class.	Second Class.	Third Class.
From Leicester.	6S 0D	4S 6D	2S 0D
Syston . . .	5S 0D	4S 0D	2S 0D
Sileby . . .	4S 6D	3S 6D	1S 6D
Barrow . . .	4S 0D	3S 0D	1S 6D
Loughborough	3S 6D	2S 6D	1S 6D

Persons wishing for Tickets must apply at the respective Stations on or before Saturday evening, the 8th instant, and none can be issued after that time.

By order,

J. F. BELL, Secretary.

Leicester, August 5th, 1840.

The fourth excursion was the most remarkable of all, the number of passengers conveyed by it being far in excess of anything known at the present time. The fact that over 2,000 passengers were conveyed in the train excited the popular imagination at the time, and the details are of the most interesting kind. The official announcement ran thus:

EXCURSION TO LEICESTER.

On MONDAY, August 24th, 1840.

The Inhabitants of Nottingham and surrounding Villages are respectfully informed that an arrangement has been made with the Directors of the Midland Counties Railway to send a SPECIAL TRAIN, capable of accommodating Two Thousand Persons, to view the splendid alterations which have recently been made in the Leicester Exhibition.

The Train will leave Nottingham at half-past Eight o'clock in the Morning precisely, and Leicester at half-past Six in the Evening.

Tickets may be had at the Exchange; Institution Rooms, St. James's Street; the Booksellers; and of Mr. HENRY WILLIAM SHIPLEY, Honorary Secretary, 2, Collin Street.

Nottingham, August 14, 1840.

The *Leicester Chronicle*, describing this excursion in its issue of August 29th, says: "The roofs of the unfinished houses in the neighbourhood were crowded, and every tree that grew about was destined to support more limbs than its own. The gallery over the esplanade at the station-house was crowded with elegantly dressed females, in front

of whom the band of the Duke of Rutland was stationed, and from time to time enlivened the listeners with some of its best pieces. At 11.30 alarm was felt at the non-appearance of the train. An engine with several of the railway labourers started off to meet it. Another feverish half-hour crept on, when a second engine carrying a few of the directors was despatched. At half-past twelve, however, a thin vapour, a little smoke, then a huge undulating mass was discovered at the extremity of the horizon and gave assurance that all was safe. In a minute a long lingering, undulating mass of wood and iron slowly emerged from the dark mass of vapour which partially accompanied it like a body-guard, and rushing along the line with a noise resembling the dashing of a thousand surges on a rocky shore. In an instant the anxious passengers jumped on the esplanade where the Managing Committee of the Exhibition attended to receive them." This paper further says there were sixty-five coaches, *i.e.* eight firsts, forty-nine seconds, and eight thirds, and more than 2,000 people.

The *Leicester Journal* of August 28th relates the facts as follows: "The engines were overloaded, and the progress was slow. There were about 2,400 persons. A special engine, with all proper means and appliances in case of accident, was sent off to reconnoitre, but did not return. At length, about 12.30, when the excitement had almost worn itself out of long endurance, a white flag, the signal of security, was seen from the station waving in the air. The enormous train of nearly seventy carriages passed majestically in review before the astonished spectators. It was indeed a wonderful scene. Grand! magnificent! sublime! were the terms which gave vent to the feelings as in countless succession the animated mass rushed into view. It was in truth a moving city, with banners and music and accompaniments and all the material of high excitement to enhance its efficacy."

This demonstration of the possibility of carrying large numbers of people from one point to another at cheap fares was satisfactory in every way, for whilst it was a great boon to the people it also proved very remunerative to the Company, and the fame of this new movement spread far and wide, and was introduced on the Sheffield and Rotherham and North Midland systems on June 1st, 1841.

But it was left to Mr. Thomas Cook to lay hold of this new system, and to devote the whole of his life's energies to its promotion in all parts of the world. He realised in a supreme degree the enormous possibilities which could be opened up by the extension and general introduction, on a settled and definite plan, of this great business of cheap travel for the million.

Mr. Cook ran his first excursion from Leicester to Loughborough,

in connection with a temperance demonstration which was held in Mr. Paget's park. The train was a "public excursion," and left Leicester on the morning of July 5th, 1841. It was drawn by two of Bury's four-wheeled engines, and consisted of fourteen open third-class passenger carriages, and one first-class carriage at the rear, a seat upon which was occupied by the guard ; 570 passengers were conveyed by this train at a shilling a head for the double journey. To Mr. Thomas Cook belongs the honour of being the first person to hire a special train at his own risk, sell railway tickets to the public, and personally travel with the train to look after the comfort of his passengers. In fact, he was first Excursion Agent, and so well did he perform the duties that he was always afterwards in request when any "special train" was required, and by continuing "the business of travel" built up the great firm of Thomas Cook and Son, whose offices will be found in every part of the world. A few years ago, when talking over the events of July 5th, 1841, with the author, Mr. Cook remarked, "It is a fact worthy of note that the fare of one shilling which I fixed for the trip from Leicester to Loughborough and back" (twenty-five miles) "is the excursion fare which the Midland Company charges for the same journey to-day."

CHAPTER IV.

THE NORTH MIDLAND RAILWAY

DURING the time that Robert Stephenson was constructing the Leicester and Swannington Railway and that George Stephenson was sinking the pits at Snibston, near Coalville, many visitors of importance were frequently to be seen at Alton Grange, Ashby-de-la-Zouch. Indeed, it is well known that George Stephenson's house was the birth-place of many railways.

On one celebrated occasion, early in February, 1832, a number of Stephenson's friends visited him to inspect the works and to discuss projects for further railway enterprise of a very extensive and far-reaching character. One of these enterprises was the construction of the North Midland line. When it is mentioned that the visitors included George Carr Glyn, banker, London, Charles Sturge, Birmingham, John and Joseph Ellis, both of Leicester, Edward Cropper, Henry Booth, and Joseph Sandars, of Liverpool, Edward Pease, of Darlington, Samuel Beale, Birmingham, William Vickers, of Sheffield, Henry Houldsworth, and others, it is not difficult to see that although the visit was simply a friendly one, the right men were present to lay schemes and draw plans for future railways. Immediately afterwards we find that "Old George" attended a meeting in London at the bank of Mr. George Carr Glyn, when it was decided that he and his son Robert should examine the routes for several lines.

In May, 1833, an Act was passed for the making of the London and Birmingham Company's railway, and in view of this fact and that the Midland Counties Company was about to make a connecting link from Rugby to Derby, Mr. Stephenson formed the opinion that a company should be incorporated to continue the chain of communication from Derby to Leeds, and that various other lines should be made, extending from Normanton to York, Newcastle, Berwick, and Edinburgh, in order that through trains could run from Edinburgh to London, Euston. "Old George" explained his idea to his friends, the "Liverpool party," who perfectly agreed with the through route

from London to Edinburgh, and that it would be better to proceed by the construction of various links rather than form one vast company to cover the whole distance from Derby to Edinburgh.

Mr. George Stephenson and his secretary, Mr. Binns, drove over from Alton Grange to Derby, and then started to drive to Leeds in order to find the best route for the North Midland Railway. Mr. Stephenson held the opinion that important main lines should not have gradients of more than 16 feet rise per mile, or 1 in 330.

The route he selected, and which is the present Derby and Leeds line, left the Derby Station, passing over the canal bridge to Amber Gate, Clay Cross, Chesterfield, Staveley, Eckington, Masborough, Normanton, and to the passenger and goods station to be constructed at Hunslet Lane, Leeds.

In order to obtain the very good gradients which he considered of vital importance, Mr. Stephenson was obliged to avoid running through Sheffield, Barnsley, and Wakefield, but he pointed out that branches could easily be constructed from those towns to join the main line. The inhabitants of Sheffield were in favour of the railway running from Chesterfield, *viâ* Dronfield, to Sheffield and thence forward to Masborough. The Sheffield route and the Staveley route formed the subject of a bitter contest. Ultimately the people of Sheffield had the Dronfield route again examined, and came to the conclusion that the gradients would be too severe. They therefore accepted the suggestion of Mr. Stephenson that they should themselves promote a Sheffield, Masborough, and Rotherham Railway Company.

Mr. George Hudson, of York, also attended upon Stephenson and pointed out the great importance of the North Midland going to that city, and the inhabitants of Wakefield also strongly pressed their claims upon him. However, "Old George" was not to be moved. He was determined that "his line should not be more severe than 16 feet rise per mile," but he suggested that independent companies should be formed to connect York with the North Midland at Normanton, and also that a line should be made from Normanton, through Wakefield, to Manchester. The York and North Midland and the Manchester and Leeds Companies were the result of these views. Some of the leading men in Bradford wished the railway to run to their town, but they were informed that a line to Bradford must form the subject of another undertaking.

The Act for the incorporation of the North Midland Railway Company, conferring powers to make the line as suggested by Mr. Stephenson from Derby to Leeds, received the Royal Assent on July 4th, 1836, and the works were commenced early in the following year.



GEORGE STEPHENSON
(Engineer, North Midland Railway).

70 . VIII ANATOMIA

Near Amber Gate (as it was written at that date) the River Amber, running in a valley, and the Cromford Canal, constructed upon a high embankment, had to be passed, the line going over the one by a bridge and under the other by means of an aqueduct. This aqueduct consisted of an iron trough, which was floated on the canal to the right position and then sunk, and afterwards the opening for the railway was cut through the canal embankment, thus avoiding any delay to the boat traffic.

At Amber Gate it was necessary to construct a tunnel of elliptical shape in order to withstand the pressure due to the movement of the hill. Then Stephenson's great genius was brought into play, and it must be remembered that he had constantly to deal with great and small engineering problems of a complex character, in regard to which there was no previous experience either of his own or of others to guide him. It is truly marvellous how Stephenson met and overcame difficulties so varied in their nature, and although this was a small one, it was none the less important, for there had been no tunnel of this kind previously constructed. The tunnel intersected the foot of a high hill on a slippery base of shale, so that as fast as the excavation was made the lateral pressure of the hill would cause a side slip, which would crush in the sides of any ordinary tunnel. Stephenson met this by making the tunnel of an oval section, having its least diameter in a vertical direction and its greatest resistance at the sides. Thus the tunnel was able to resist the great pressure of the hill by conveying it to the earth on the other side.

When the works reached Clay Cross the construction of a tunnel there led to a very important discovery of coal beds, which Stephenson at once turned to advantage. Realising the vast value and utility of opening up these coalfields, he communicated with his friends, the "Liverpool party," who, acting on his advice, joined him in a lease of land at Clay Cross, and Stephenson opened up the now famous Clay Cross Collieries. Here he also constructed coke works, and at Amber Gate he made limekilns, with the result that in a very short time after the lines were opened he became by far the largest trader with the Company. The limekilns were at Amber Gate, but the limestone was brought from Crich by means of a branch line three miles in length. Stephenson's interests at this period were so much bound up with this district that in order to look after these works he removed his residence to Tapton House, Chesterfield.

One morning in 1839, when Stephenson was engaged in the construction of the tunnel at Clay Cross, the electric telegraph block system of signalling was first introduced to his notice, the electric

telegraph having just come into use. Stephenson, who had been making an inspection of the works in the Clay Cross Tunnel, was met by Mr. William Fothergill Cooke and Mr. Wheatstone, who had come to explain to him the importance of the electric telegraph as a means of regulating and controlling the working of trains.

They stated that their system was being tried upon the Great Western Railway, and that in their opinion "the candle placed in the window at Glenfield Tunnel was not sufficient protection for trains in a double-line tunnel such as Clay Cross," and Stephenson agreed with them on that point, and at once perceived the great value and utility of the invention. It was arranged that the telegraph should be fitted up through this tunnel and the arrival and departure of each train reported; and further that if a second train should arrive at either end before the previous one was telegraphed as "Arrived," it should be stopped by signals and detained until such message was received. This was to all intents and purposes the object and spirit of what is now known as the "Block System."

During the next two years this invention underwent a great improvement and development, and in 1841 Cooke and Wheatstone at Clay Cross Tunnel introduced electric instruments or dials for controlling the trains, perfectly independent of the "speaking instruments" and to show at a glance if the line was "clear" or "blocked." On the left-hand top corner of these instruments they printed the word "Stop," and on the right-hand "Go on"; there was also a brass pin to hold over the handle, and consequently the needle, to either side of the dial; they further added an electric bell to call the attention of the man in the signal-box, who was then called a "policeman," a title which has since given place to the more appropriate one of "signalman." Outside the tunnel a semaphore signal, with an arm painted red, was fixed in order to indicate to the drivers of trains when to run into the tunnel or to stop. These particulars are of interest, proving as they do that as long ago as 1841 the absolute block system of maintaining a clear section of line between each train was strictly carried out at Clay Cross.

The North Midland Railway was opened in two sections, the first, extending from Masborough to Derby, on Monday, May 11th, 1840, and the remainder, from Leeds to Masborough, on Tuesday, June 30th, of the same year. The portion from Masborough to Derby had been specially expedited in order to form a junction with the already existing Sheffield and Rotherham Company's system, and thus by using that line from Masborough to Sheffield gave the latter town and district a through communication with Derby and the south. Up to this time the large

town of Sheffield had been isolated and cut off from railway communication with the south.

On May 11th, 1840, the Sheffield and Rotherham Company's ordinary train, leaving the "Wicker" passenger station at 5.30 a.m., had through carriages attached for Derby, and on arrival at Masborough these were added to the North Midland Company's first up train, which opened the new line from Masborough to Derby. The traffic was heavier than expected, and in consequence of the slippery condition of the rails, time was lost to such an extent that the train was sixty-five minutes late on reaching Chesterfield. George Stephenson and Mr. Hudson, who



CHESTERFIELD.

had been Stephenson's guest at Tapton House, joined the train at this point. To assist the heavy train a pilot engine was attached to the rear and it ran as far as the north end of Clay Cross Tunnel, when it was detached. The result was that when the train was three-quarters of the way through the tunnel the engine stopped for want of steam. A man was sent back to fetch the "pilot," and people at the rear of the train, fearing a collision, got out of the carriages. At this stage Stephenson's Northumbrian accent was heard above the din (for he could not be seen) complaining of the mismanagement in sending away the extra engine when it was most wanted. Owing to these delays the train, which was due at 7.45 a.m., did not reach Derby till 9.30. The first up journey, it will thus be seen, was not very

satisfactory, but the first down train, leaving Derby at 9.15 a.m., which had Robert Stephenson on the engine, performed the journey in the allotted time.

It is stated by the chroniclers of the time that "the railway station at Derby is a wonderfully extensive place, which astonishes every person arriving there for the first time. So stupendous and magnificent does everything appear that imagination almost leads passengers to suppose they are arrived at a market-place for steam engines."

The completion of the North Midland Railway from Hunslet Lane passenger station, Leeds, through to Derby, *via* Masborough, was hailed with great public rejoicings. On the occasion of the opening (June 30th, 1840) a train, drawn by two engines and consisting of 34 vehicles, containing about 500 persons, ran from Hunslet Lane passenger station to Derby—a distance of 72 miles 64 chains. At Normanton carriages arrived from the York and North Midland line containing George Hudson and the directors and officials of the York line. At the same station a carriage containing the directors of the Manchester and Leeds Company was also attached; and at Masborough the Sheffield contingent so swelled the number of vehicles that the total reached 62 coaches. It thus became necessary to work the train in two portions, each drawn by two engines and assisted by a pilot in the rear.

At Derby there was "a stand-up lunch" served on the platform. There was "the band of music" and the cheering usual on such occasions, after which the train returned to Leeds, the time taken in each direction being about five hours.

The event is described at length in the local press at the time. The *Sheffield Mercury*, in its issue of July 4th, 1840, says: "This line was formally opened throughout from Derby to Leeds on Tuesday, June 30th [opened from Masborough to Derby, May 11th]. The train, consisting of two engines with their tenders and 34 first and second-class carriages, left the Leeds Station at 8.3 a.m. At the Normanton Station it was joined by a number of carriages from the 'York and North Midland' Company, filled by a highly respectable party of ladies and gentlemen. At Barnsley, at Chesterfield, and at Belper bands of music were in attendance to add to the interest and pleasure of the scene. Not the slightest accident of any kind occurred, and at one o'clock the immense line of carriages was hailed at the Derby Station by the welcoming cheers of the assembled multitude, the band playing appropriate airs. Here a cold collation with wine was provided free of charge by the Company to those who had tickets. Two immense lines of tables stretched along the stone platforms, but sitting was out

of the question. The side of the station, as well as the tables, was decorated with evergreens. The return train, with a party from Derby, left at 2.30 and reached Leeds at 6.55, about 500 persons going by it. In the evening the directors entertained their friends at a dinner at the Music Hall in Albion Street, which was tastefully fitted up for the occasion, and graced by the presence of several hundred ladies. Mr. George Carr Glyn, Chairman of the Company, presided, and amongst others were present the Rev. Dr. Hook, Mr. Wm. Beckett, the Mayor of Leeds, the late Lord Mayor of York (Mr. Hudson), Mr. E. Baines, Mr. Holdforth, Mr. Newton, Mr. Holdsworth, Mr. Pickersgill, Mr. Goodman, etc., etc. Trains for York and Sheffield left at 10.30 p.m. to take guests home. Public traffic began next day, Wednesday, July 1st."

The *Sheffield and Rotherham Independent* of July 4th, which has a much fuller account of the above opening, says: "A short train left Sheffield for Masboro' at 9.30 a.m., but not many went by it. The train from Leeds did not reach Masboro' till 10.30, drawn by two engines and pushed by a third. It appeared to be of interminable length. Several of the stations, like Masboro', had small engines to pump water for the locomotives and also boilers for heating it. The North Midland Railway Company built and managed Derby Station, the other lines paying them 6 per cent. on the cost for the privilege of using it. It was erected by Mr. Thos. Jackson, builder, of Pimlico, who also built Hunslet Lane Terminus. Considerable excitement was caused on the return journey by finding four horses on a high embankment between Barnsley and Wakefield. Speed was slackened, and they got safely out of the way where the bank ceased."

Derby Station at this period thus became a very important railway centre, not only as the point of junction between the three companies—the North Midland, the Midland Counties, and the Birmingham and Derby—but as the connecting link of traffic to and from the north. To facilitate the exchange of traffic the three companies very wisely determined to construct one station for the joint use of all three. The North Midland Company being the largest and most important, and having its head offices at Derby, undertook the work and the management of the station, but the other two companies, although they did not find any of the capital, agreed to pay 6 per cent interest on the proportion of the cost of that part of the structure which was for their accommodation.

The station under these circumstances was a very large and commodious one, certainly one of the largest in existence at that period. Twenty-six acres were inclosed, and nine lines of rails were included

under the roof, the entire width of which was 140 feet, in three spans or bays — one 56 feet and two 42 feet each — an arrangement which exists in an extended form to the present day. The roof was 38 feet high, with a total length of 450 feet, but one of the three covering spans was extended to a total length of 1,050 feet. The usual station offices and buildings for each company were on a corresponding scale. The North Midland in addition had its board room and chief offices of a handsome character.

Although the passenger stations were united, each company had for its other traffic independent goods sheds, and there were also three independent locomotive sheds and works adjoining each other on the eastern side of the passenger station. The engine sheds, or "houses," as they were then called, of the North Midland differed from those of the other companies, which were of the ordinary straight or rectangular shape. That of the North Midland was of a unique character; it was polygonal in shape — 16 sides with 16 sets of rails, all converging on one turntable in the centre, the diameter of the structure being 190 feet; and the lighting was from a dome roof 50 feet high. This building is still in use. The "carriage houses" and workshops formed wings from the polygon, and were 180 and 160 feet in length. Mr. Jackson was the contractor for the whole of these buildings.

At that time (1840) it was seen that a large hotel was necessary for the accommodation of travellers, Derby being a very convenient centre. But although the project was thus early initiated, it was not carried out until many years afterwards, when the present handsome and commodious structure adjoining the station buildings was erected by the Midland Company.

On Wednesday, July 22nd, 1840, the Queen Dowager travelled from Nottingham to Leeds, on her way to Harewood House and Bolton Abbey. The special train consisted of three royal carriages, the property of the London and Birmingham Railway Company, "fitted up in a most superb style, the linings and trimmings being of white figured satin, with white sarsenet blinds, the exterior superbly gilt and ornamented, the springs being the same as those used by the Company for their mail carriages. There were also four trucks, for the conveyance of the private carriages and luggage van of Her Majesty and suite. At Derby a North Midland carriage, elegantly fitted up, was substituted for the one in which the Queen Dowager had come from Nottingham. Several North Midland directors went on with the train. Engine No. 10 was attached at Derby, and was attended by another in case of accident. It proceeded at a rapid rate, and was not expected to stop for 40 miles, till it wanted water. At Clay Cross, however,

the Queen Dowager requested that the train might go at a slower pace, and the royal party consequently did not reach Leeds in much less than the usual time."

The Sheffield and Rotherham and North Midland Companies ran an early excursion train, which takes rank amongst the very first, and was announced as follows :—

NORTH MIDLAND RAILWAY.

EXCURSION TO AND FROM SHEFFIELD AND DERBY, ON WHIT-TUESDAY, 1ST JUNE, 1841.

THE PUBLIC are respectfully informed that arrangements are made for offering them an opportunity of visiting DERBY and the ARBORETUM or PUBLIC GARDENS, to which they will be allowed FREE ADMISSION.

The Train, consisting of First, Second, and Third Class Carriages, will depart from Sheffield at Nine o'clock in the Morning, returning from Derby at a Quarter-past Six o'Clock in the Evening.

FARES.

First Class . . . 7s. | Second Class . . . 5s. | Third Class . . . 4s.
From Sheffield to Derby and Back.

Tickets will be on Sale (from Saturday, the 22nd, to Whit-Monday only) at the SHEFFIELD and ROTHERHAM STATION, *Independent* and *Mercury* offices, and at Mr. WILEY'S, Haymarket. As the Train must depart precisely at the time stated, none will be issued after Monday, 31st May.

By Order.

Sheffield Station, 15th May, 1841.

The *Sheffield Mercury*, June 5th, describing this trip, says: "On Tuesday the inhabitants of this town were generally on the *qui vive* to witness the departure of the special train on the North Midland Railway from here to Derby. There were forty-seven North Midland and Sheffield and Rotherham carriages and five engines, containing about 2,000 persons, and about 100 were left behind, they not having applied for tickets in time. There could not have been less than 20,000 spectators. The train started about half-past nine, and arrived at Derby at a quarter-past twelve. It returned at 6.30, and reached Sheffield at 8.50 without any accident occurring, save a few hats being blown off and an individual falling out of a carriage when it arrived at Sheffield from getting up before it had stopped."

Although the North Midland carried a large traffic, the dividend did not satisfy the shareholders, and a committee was appointed to reduce working expenses. This committee reported in favour of great reductions. Directors' fees, it considered, should be cut down

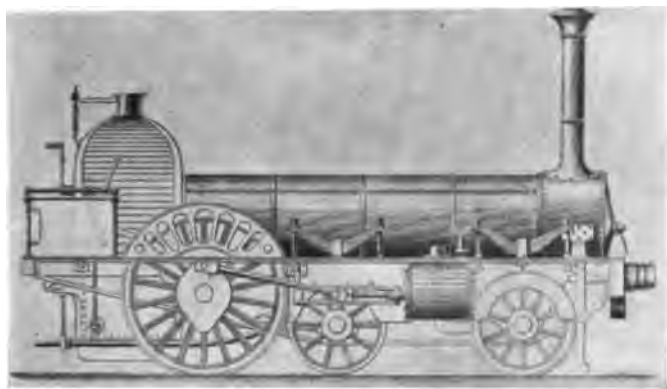
50 per cent., the officers' salaries to be reduced 10 per cent., and 5 per cent. to be taken off the wages of those receiving less than £110 a year; but it suggested that stationmasters should not be reduced, as several of the best men had given the committee clearly to understand "that sooner than stand reductions they would go to other lines." Expenses were reduced in every department, and a number of servants were discharged, including the men who worked the block system at Clay Cross Tunnel, that system being considered too costly.

Mr. Robert Stephenson, who had a salary of £1,000 a year as Engineer-in-Chief, at his own request had the amount reduced to £400. However, in spite of all these savings, it was found that the dividend to December, 1841, was only 3 per cent. With the view of increasing the traffic, Mr. Robert Stephenson suggested, and Mr. Swanwick, the resident engineer, surveyed, proposed branches extending from the North Midland near Wath to the centre of the South Yorkshire colliery districts. Stephenson's idea was that the best way to improve the dividends was to increase the traffic and extend the Company's system into new districts and other coalfields; but the directors and several large shareholders were of the contrary opinion, and they thought that with falling dividends they ought not to lay out capital on new works. Events proved that Stephenson was right, but for a time the views of the directors prevailed—a decision which was most unfortunate, as it subsequently led to a large portion of the South Yorkshire coal traffic falling into the hands of the Great Northern Company.

The question of the maintenance of the permanent way had for some considerable time engaged the attention of directors and engineers of railway companies generally as to the most advantageous of two systems, namely, maintenance by the Company's own officials or the employment of an independent contractor. It was determined by the North Midland, in order to thoroughly test the matter, to try the latter system; and on May 17th, 1841, an advertisement was issued from the Engineer's office of the North Midland Railway at Chesterfield, stating that tenders for the maintenance of the way and works between Derby and Masborough may be sent to H. Patteson, Esq., the Company's Secretary, at Derby, by ten o'clock on June 5th. The distance would be divided into five or more separate lengths, for each of which parties might tender. Drafts of contracts and specifications would be ready at the Engineer's office by May 27th, where parties could obtain orders allowing them to walk along and inspect the line. This contract was continued for a number of years, and from a report of a Committee of Investigation in 1849 it may be here stated that

the change from light to heavy rails saved $7\frac{1}{2}$ per cent. on the contract price. With light rails and stone blocks six men were required, and with heavy rails and cross wooden sleepers only two and a half men per mile were required for the maintenance of the line. This system of contracting for permanent way repairs and maintenance was continued for many years after the Midland was formed, and we believe it was actually in operation till 1873, when the last of the contractors died.

Early in the year 1842 the locomotive officials at Derby directed the attention of Mr. Robert Stephenson to the important fact that the chimneys and smoke-boxes of the locomotive engines were being



LONG BOILER ENGINE
(North Midland Railway).

very quickly destroyed, and he therefore made some experiments with the North Midland Company's engines at Derby to ascertain the degree of heat which was escaping. First he placed tin in small iron conical cups and suspended them in the smoke-box, and it was found to disappear quickly; next lead was tried in the same manner, and was found to melt nearly as easily; and lastly, zinc was tried, which was soon driven off in vapour, clearly indicating a temperature of 773 degrees in the chimney, and showing that a great waste of heat and fuel was taking place. To overcome this evil Mr. Stephenson decided to lengthen the boiler tubes of locomotives from 9 feet to 13 or 14 feet. He also adopted the name "long boiler," and placed all the axles under the barrel or circular part of the boiler.

In the first of these "long boiler" engines the driving wheels were

placed between the leading and trailing carrying wheels, the cylinders being kept forward under the smoke-box.

Further experiments at Derby in 1843 proved that the "long boiler" was successful in reducing the heat in the chimney to very little over 442 degrees, as upon placing tin in the smoke-box it was found just to melt at the corners; and early in the year 1844 Mr. Robert Stephenson decided to place the four carrying wheels in front of the engine, and the driving wheels close in front of the fire-box. These improvements were regarded as of great value and importance at the time, and they greatly reduced the consumption of coal by the locomotives.

At this period the management of the Company was controlled partly in London and partly in Leeds and Derby, which proved a very inconvenient arrangement; and at the first meeting of the shareholders in the year 1842 Mr. George Carr Glyn resigned the post of Chairman in order that Mr. William L. Newton, of Derby, could occupy the position and enable the whole of the general management to be concentrated at Derby, where it has remained ever since.

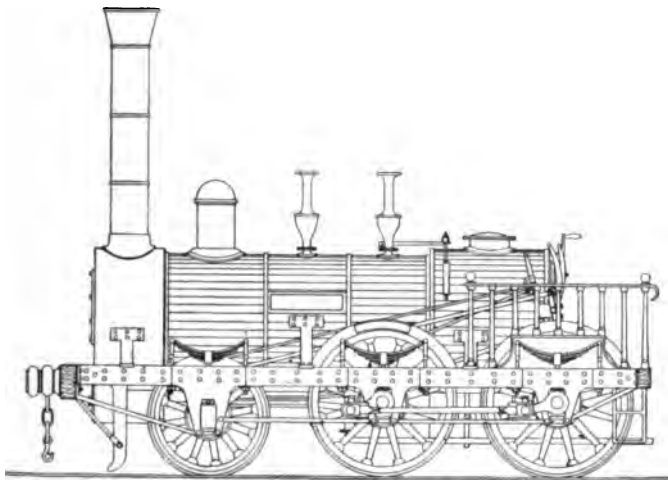
The shareholders at the same meeting, notwithstanding the great depression in trade, expressed their surprise that in view of the "reductions" in expenses the dividend was only 2 per cent., and a very important speech was made by Mr. George Hudson, an energetic and well-to-do linen-draper of York, who was also Chairman of the York and North Midland Railway. Mainly in consequence of this speech a Shareholders' Committee of seven members, with Mr. Hudson as its Chairman, was appointed to consider the position and future management of the Company.

The Shareholders' Committee made a report to a meeting of shareholders in November, 1842, upon the necessity for further reductions, but Mr. Newton, the Chairman of the Company, expressed the opinion of the directors that the suggestions of the Committee "could not be carried out with safety to the public." This caused an uproar, during which Mr. Newton left the chair, and the meeting terminated. Six of the directors shortly afterwards felt that it was not a very pleasant position to hold office under the circumstances, and they resigned, Mr. Hudson and five members of the Shareholders' Committee being elected to take their places.

The anxiety of the directors to carry out the policy of reduction in every possible direction actually led them to adopt the extraordinary course of announcing by advertisement their desire to sell sixty new carriages, consisting of thirty first-class and thirty second-class. The

advertisement, which appeared on March 11th, 1843, gave as the reason of the sale that the Company had too many coaches for the requirements of their traffic.

The difficulties of the Company became very great, the directors and the shareholders were divided in their counsels, and the time was at hand for a great development and an extended combination.



GOODS ENGINE, NORTH MIDLAND RAILWAY, 1840.

CHAPTER V.

THE BIRMINGHAM AND DERBY JUNCTION RAILWAY

IT has already been explained in a previous chapter that the Midland Counties Railway, by means of its Trent and Pinxton branch, appeared to threaten the interests of the North Midland; and in order to checkmate this movement the latter company came to the conclusion that it must find an independent junction with the London and Birmingham Railway for through traffic. George Stephenson was consequently instructed to survey a line from Derby, passing through Burton, Tamworth, and Whitacre, to connect with the London and Birmingham Company's system at Stechford, near Birmingham, so as to join a line which was proposed to run to Gloucester and the West of England. There was also to be a "Stonebridge branch" to extend from Whitacre Junction to Hampton Junction, which would give a connection with the direct line to London, and thus make them entirely independent of the Midland Counties line.

Although these were the true objects of the line, namely to give direct communication with the West of England and more particularly with London, the latter being by far the most important of the two, it was given out that the line was merely one to connect Derby to Birmingham. It soon, however, became apparent that the Birmingham and Derby line was to provide an alternative route to the south *via* Hampton, and by this means convey the traffic for which the Midland Counties had provided by their line through Leicester to Rugby.

This state of affairs brought the two companies into open conflict before even parliamentary sanction had been given to their schemes. But after the usual recriminations had been indulged in on both sides, a calmer frame of mind was shown, with the result that negotiations for the settlement of their differences by friendly means were opened; and it was suggested that the Pinxton branch, which was regarded by the North Midland as threatening their interests on the one hand, and the Stonebridge branch, which the Midland Counties regarded as infringing their rights on the other, should both be

eliminated from the scope of the Bills to be presented to Parliament. The representatives of the Birmingham Company appear to have regarded this proposal as satisfactory and the arrangement completed, and, acting on this assumption, struck out the clause in their Bill relating to the Stonebridge branch, and withdrew it from their advertisements, which by statute have to be published in the newspapers of the district through which the line was to pass. Newspapers were then only published weekly in the provinces, and the chagrin and indignation of the directors of the Birmingham and Derby line may be imagined when they discovered that their notices were withdrawn and it was too late to remedy them, whilst those relating to the Pinxton branch were retained. Whether this "piece of sharp practice," as it was termed, was due to accident or design, or to the naturally strong desire on the part of the Midland Counties to retain the branch which was at the very foundation of their undertaking or not, it greatly embittered the relations of the two companies, and ultimately led to the Midland Counties being completely outgeneraled and outmanœuvred in the parliamentary conflict by their rivals, and afterwards to a disastrous war of rates between the competing points.

The difficulty thus created by the withdrawal of the one branch and the retention of the other was met by Mr. Beale by means of an independent Stonebridge Junction Railway Company, which was formed to make the Hampton branch over exactly the same route. When the Bills were before Parliament the Stonebridge Company and the Birmingham and Derby Company were amalgamated under the title of the Birmingham and Derby Junction Railway Company, and the Act of Incorporation was passed on May 19th, 1836.

Immediately after the Royal Assent had been given the Company commenced the purchase of land and to make arrangements for the construction of the line from Derby to Whitacre, as well as the branch to Hampton; but it entirely neglected to take any steps whatever to make the portion of main line from Whitacre to the proposed junction near Birmingham. The object of pushing forward the branch to Hampton with all possible speed was in order that they might forestall the Midland Counties line to Rugby, have their line opened first, and thus secure the through traffic to London. Further, an arrangement was made with the London and Birmingham Company to convey Derby passengers to Birmingham *via* Hampton to Curzon Street Station, thus obviating the necessity for making the Stechford line.

The London and Birmingham line was completed and through trains ran on September 17th, 1838, and on August 5th, 1839, the

connecting line from Derby to Hampton Junction, $38\frac{1}{2}$ miles, was formally opened by the directors, and ordinary traffic commenced on August 12th of the same year. It will thus be seen that from August 12th, 1839, to July 1st, 1840, the only route from Nottingham and Derby to London was *via* Burton, Whitacre, and Hampton, and when on July 1st, 1840, the lines were opened from York and Leeds to Derby a very considerable traffic was placed on the Birmingham and Derby Junction system; but on the same day serious competition with this line was commenced by the opening of the Midland Counties Railway route to Rugby.

The directors of the Midland Counties Railway were undoubtedly exceedingly annoyed to find that the rival route was opened first, and that this was entirely in consequence of the clause in their



THE "DERWENT," SHARP'S LOCOMOTIVE, 1839
(Birmingham and Derby Junction Railway).

own Act—one of the points in which they were placed at a great disadvantage by their opponents—which prevented the commencement of their railway from Wigston to Rugby until August 1st, 1837.

The Birmingham and Derby Junction Company remained in sole possession of the Derby traffic for ten and a half months, but on July 1st, 1840, the Midland Counties was opened throughout to Rugby. Then came the tug of war; the Midland Counties was determined to obtain the traffic for which its line was made, and the Birmingham and Derby was equally anxious to retain the advantage which it possessed as the result of parliamentary strategy.

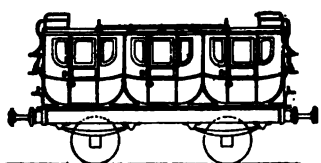
Speeches were made on each side, both companies considered that theirs was the proper route, and that the other was acting "ludicrously," "evasively," delusively"; also that traffic was being "abstracted from direct channels" to be sent by a roundabout route.

Then fares were reduced until a first-class passenger, if going to Rugby or London, was only charged 2s. for the $38\frac{1}{2}$ miles from Derby

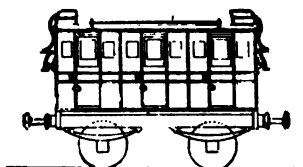
to Hampton instead of the proper local fare of 8s. The second-class fares were also reduced to 1s. instead of 6s., which was charged for local passengers.

A loss of 75 per cent. did not appear to trouble either company so long as their rival lost heavily. Indeed, it was actually proposed to convey the London passengers from Derby to Hampton for nothing; but eventually it became evident to all practical men that this absurd competition must not go on, and that two valuable properties were being ruined.

At the general meeting of the Birmingham and Derby Junction Company, held at Birmingham in August, 1841, the Chairman suggested that it would be well for a "Shareholders' Committee of Investigation" to be appointed, to consider the position and affairs of the Company generally and the keen competition with the Midland Counties Railway, which at that period was causing a great deal of traffic to be conveyed at unprofitable rates.



FIRST-CLASS CARRIAGE



SECOND-CLASS CARRIAGE

(Birmingham and Derby Junction Railway, 1839).

The line from Whitacre to Stechford, which received parliamentary sanction under the original Act of May 19th, 1836, was never constructed. That portion of the scheme was left in abeyance, and by an Act of June 30th, 1837, the time was extended for the taking of lands, whilst in the following year (1838) a third Act provided for the abandonment of the Stechford line and the use of the London and Birmingham Railway, and the substitution of an entirely new route, 9 miles 71 chains in length, from Whitacre Junction, passing Forge Mills, Water Orton, and Castle Bromwich, to the passenger and goods station which the Birmingham and Derby Railway Company determined to erect at Lawley Street, Birmingham, giving communication with the London and Birmingham Railway by means of a lift.

But although these powers were obtained, it was only when there was a prospect of forming a communication with the Birmingham and Gloucester Company, and also a fear that the broad-gauge Great Western system was likely to be extended to Birmingham, that the

works were taken in hand. In the spring of 1841, however, the construction of the line was commenced and pushed forward with all practicable speed.

The Whitacre and Birmingham extension was completed and opened by the directors on February 9th, and to the public on the following day, February 10th, 1842, when the Birmingham and Derby Company's line became an actual link between the two towns direct, passengers and goods being conveyed to the new terminus at Lawley Street instead of to Curzon Street, *viâ* Hampton. This saved the tolls which had previously to be paid, and the station buildings, which were an excellent type of those of the period, included all the head offices and board room of the Company.

Lawley Street Station was constructed on a low level, whereas the London and Birmingham Curzon Street Station was on a high level; and to enable through traffic to be exchanged between the companies a "connecting lift" was constructed close to Lawley Street, which raised or lowered wagons or vehicles, as the case might be, one at a time, from one level to the other. But although this was the simplest operation possible for the transfer of a small amount of traffic from one line to another, yet when it occurred in the middle of a long journey to a goods train from the north or midland districts to the west and south-west of England it was a cause of serious delay, and the evil became so great that subsequently it had to be dealt with by means of a connecting railway.

The original passenger terminus at Lawley Street, Birmingham, after being in use for a number of years for passenger traffic, has for this purpose been for many years superseded by the great structure at New Street. The Lawley Street buildings, greatly extended, are now exclusively devoted to goods and mineral traffic. These new buildings are quite worthy of the Midland Company and of the vast commercial centre in which they are situated.

CHAPTER VI.

DIFFICULTIES SOLVED BY AMALGAMATION

FIERCE and unrestrained competition between the three rival companies—the North Midland, the Midland Counties, and the Birmingham and Derby Junction—had brought all three, in the years 1842 and 1843, into a position which was far from being pleasant to the directors or satisfactory to the shareholders. All of them were burdened with heavy administrative charges, and while on the one hand traffic, as far as two of them were concerned, was being conducted at unprofitable rates, on the other, invasions of their territory were threatened from the south and east, and by the broad gauge from the west. It thus became apparent that whilst the three companies were engaged in the keenest warfare with one another, the very existence of all three was seriously threatened, and their rivalries and conflicting interests rendered them comparatively powerless unless changes of a far-reaching character were brought about.

The first step towards a drastic change of policy was initiated by Mr. James Heyworth, who with his family held one twentieth part of the share capital of the Midland Counties Company. This gentleman, at a meeting of that Company on August 13th, 1842, urged upon the directors the necessity of making a searching inquiry, and he expressed the opinion that they had "too many directors by half," and that instead of having twenty-four directors with a remuneration of £1,200 a year, twelve gentlemen on the Board with £600 a year would be ample for the requirements of the Company. He followed up his attack in the ensuing November, when a special meeting was held at Derby, when he proposed and demanded a committee of investigation, which, notwithstanding the opposition of the directors, was carried by a 75 per cent. majority.

This led to a proposal being made that the Midland Counties and the Birmingham and Derby Junction companies should amalgamate—a course which would have been attended with great advantages to both the companies concerned. But the proposal aroused great

opposition on the part of the "Liverpool party" and the North Midland Company, and it was evident to the North Midland that the unification of the interests of the Midland Counties and the Birmingham and Derby Junction would only give them one string to their bow in place of two. The opposition proved too powerful, and so the scheme had to be abandoned.

These efforts at conciliation having failed, the old rivalry and competition broke out afresh with ruinous effect on both companies, for the fares and rates charged were such as could yield no profit whatever. This led to a change in the attack on the part of the Midland Counties, who were advised that the system of charging by their rivals between Derby and Hampton was illegal as well as unfair and unreasonable. Application was accordingly made to the Court of Queen's Bench for a mandamus requiring the Birmingham and Derby Junction Railway Company to charge equally all persons travelling between Derby and Hampton. This they were successful in obtaining, and the Midland Counties directors were sanguine that they would be able to render it impossible to continue the existing mode of competition.

The introduction of this new and costly legal weapon of warfare threatened to entail further losses on both companies, and proved an effective instrument in bringing both parties to a more conciliatory and reasonable frame of mind. They were, in fact, weary of the prolonged turmoil and strife which was only destructive in its character, and other influences were brought into play which tended greatly to restore peace to all parties.

In the early part of the year 1843 the three companies—North Midland, Midland Counties, and Birmingham and Derby Junction—were all in positions far from prosperous, and there were signs that one would be attacked by the London and York—now Great Northern—that a line from Hitchin would probably be extended by that Company or its friends into the very centre of the Midland Counties, and that the Great Western would probably carry the broad gauge to Birmingham or Rugby, and even Manchester was spoken of as a likely termination for the 7-feet gauge.

The "Liverpool party" became alarmed at the prospect of the broad gauge overrunning the country, and they saw that the three narrow-gauge companies, which had spent so much time and money in useless fighting, must now combine to resist the separate attacks which were threatened. George Stephenson, George Hudson, and John Ellis all expressed themselves as specially anxious that a scheme for the amalgamation of the three companies should be immediately formulated.



FRONT OF DERBY STATION
(The Birthplace of the Midland Railway Company).

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ALBONIA

Mr. Hudson brought the matter before the North Midland Board, and at his suggestion communications were opened with the other two boards, with the result that in September, 1843, the proposition that the three lines should be amalgamated was approved by the other two companies. A joint committee, consisting of members from the three boards of directors, was then formed, and met at Derby Station to draw up details and arrange for a Bill to be introduced into Parliament "to consolidate the North Midland, Midland Counties, and Birmingham and Derby Junction Railways."

The joint committee had to take into account the share capital of the three companies and arrive at the respective values. The North Midland Company had "whole," "half," and "third" shares; the "whole" shares had been issued at £100, but the "halves" were issued at £40, and the "thirds" at £21 13s. 4d. The Midland Counties shares were "whole," "quarter," and "fifths"; the "whole" shares were issued at £100, the "quarters" at £15, and the "fifths" had only £2 paid up.

It was decided to consider all the above shares as of their nominal value, except the "fifths," which were to be considered as of the value actually paid up, or £2. The Birmingham and Derby shares were "whole," "third," and "eighth," and it was decided that the "whole" shares, upon which £100 had been paid, should be considered as £95; the "thirds," which had been issued at £25, to be valued at £31 13s. 4d.; and the "eighths," which had been issued at £3 18s. 5d., to be considered as £6 14s. 9d.

It was also determined that the Birmingham and Derby shareholders should receive £1 7s. 6d. per annum less dividend per £100 than the proprietors of the two other companies. These terms and the Amalgamation Bill then before Parliament were considered and approved of by special meetings of the shareholders of the three companies on April 16th and 17th, 1844. It was also arranged that the three accounts should be kept separately until June 30th, 1844, the last independent dividends for the half year being—North Midland Railway, whole shares, £2 2s. 0d.; Midland Counties Railway, whole shares, £2 2s. 6d.; Birmingham and Derby Junction Railway, whole shares, £1 6s. 6d.

It was also agreed that the consolidated company should have a board of fifteen directors, and as the three companies had been managed by thirty-four, it followed that no less than nineteen directors and two sets of chief officers would lose their positions.

The three lists annexed give the names of the directors and officers immediately before the passing of the Act, those marked * being retained for service under the new company.

NORTH MIDLAND RAILWAY COMPANY.

*William L. Newton (Chairman)	Derby.
Anthony Tittley (Deputy Chairman).	Leeds.
Henry Cox	Derby.
*Joseph Holdsworth	Wakefield.
Thomas Laycock	Sheffield.
George Wilson	Sheffield.
*William Murgatroyd	Bradford.
*Charles Tee	Barnsley.
P. W. Branner	Liverpool.
J. T. Alston	Liverpool.
*John Waddingham	Leeds.
*George Hudson	York.
*Peter Clarke	Secretary and Superintendent.
F. Swanwick	Resident Engineer.
Thomas Kirtley	Locomotive Superintendent.

Chief Office—Derby Station.

MIDLAND COUNTIES RAILWAY COMPANY.

Thomas E. Dicey (Chairman)	Leicestershire.
James Oakes (Deputy Chairman)	Derbyshire.
*William Evans Hutchinson	Leicester.
George Byng Paget	Sutton Bonnington.
John Cartwright	Loughborough.
William Hannay	Nottingham.
Douglas Fox	Derby.
*John Ellis	Leicester.
*Samuel Waters	Leicester.
*Henry Youle	Nottingham.
Lawrence Heyworth	Liverpool.
*John Taylor	Leicester.
*John Fox Bell	Secretary and Superintendent.
*W. H. Barlow	Resident Engineer.
J. Kearsley	Locomotive Superintendent.

Chief Office—Leicester Station.

BIRMINGHAM AND DERBY JUNCTION RAILWAY COMPANY.

*Samuel Beale (Chairman)	Birmingham.
*Abel Peyton (Deputy Chairman)	Birmingham.
Colonel Blane	London.
William Crawshay	London.
Archibald Kenrick	West Bromwich.
Daniel Ledsam	Birmingham.
*Josiah Lewis	Derby.
*Sir Oswald Mosley	Burton-on-Trent.
Thomas Pemberton	Birmingham.
Joseph Walker	Birmingham.
Joseph Sandars	Secretary.
James Allport	Manager.
*Matthew Kirtley	Locomotive Superintendent.

Chief Office—Lawley Street Station, Birmingham.

CHAPTER VII.

THE MIDLAND RAILWAY COMPANY

ON May 10th, 1844, the Royal Assent was given to the Act by virtue of which the "North Midland," "Midland Counties," and "Birmingham and Derby Junction" railway companies "shall be and the same are hereby dissolved," and the proprietors of shares "shall be incorporated by the name of "The Midland Railway Company."

As the new Company was to come into power immediately after the Royal Assent, it was found necessary that the Directors should be in a position to take control without delay; it was therefore enacted, "That the number of directors shall be fifteen." The names of the fifteen gentlemen had been selected in the proportion of six from the North Midland, five from the Midland Counties, and four from the Birmingham and Derby Junction, and it was also enacted that "they shall be the first directors." The Board thus constituted by Act of Parliament immediately met and elected George Hudson Chairman, and John Ellis Deputy Chairman; the following being—

THE FIRST BOARD OF DIRECTORS.

(Initials of previous companies.)

(N.M.)	George Hudson (Chairman)	.	.	York.
(M.C.)	John Ellis (Deputy Chairman)	.	.	Leicester.
(B.D.J.)	Samuel Beale	.	.	Birmingham.
(N.M.)	Joseph Holdsworth	.	.	Wakefield.
(M.C.)	William Evans Hutchinson	.	.	Leicester.
(B.D.J.)	Josiah Lewis	.	.	Derby.
(B.D.J.)	Sir Oswald Mosley	.	.	Burton-on-Trent.
(N.M.)	William Murgatroyd	.	.	Bradford.
(N.M.)	William Leaper Newton	.	.	Derby.
(B.D.J.)	Abel Peyton	.	.	Birmingham.
(M.C.)	John Taylor	.	.	Leicester.
(N.M.)	Charles Tee	.	.	Barnsley.
(N.M.)	John Waddingham	.	.	Leeds.
(M.C.)	Samuel Waters	.	.	Leicester.
(M.C.)	Henry Youle	.	.	Nottingham.

OFFICERS.

(M.C.)	Secretary	.	.	.	John Fox Bell.
(N.M.)	Superintendent	.	.	.	Peter Clarke.
(M.C.)	Resident Engineer	.	.	.	W. H. Barlow.
(B.D.J.)	Locomotive Superintendent	.	.	.	Matthew Kirtley.

Chief Office—Derby Station.

The share capital of the new Company was contributed in the following proportions:—

	£
North Midland	2,905,400
Midland Counties	1,275,000
Birmingham and Derby Junction	978,500
Total Midland Railway	£5,158,900

This capital was divided into 120,695 shares of the undermentioned nominal values:—

Shares.	Amount.				Previously.		
	£	s.	d.		£	s.	d.
24,991	100	0	0	" N.M." and " M.C."	100	0	0
6,228	95	0	0	" B. and D.J."	100	0	0
14,980	50	0	0	" N.M."	50	0	0
19,717	33	6	8	" N.M."	33	6	8
6,795	31	13	4	" B. and D.J."	33	6	8
10,000	25	0	0	" M.C."	25	0	0
12,500	2	0	0	" M.C."	20	0	0
25,484	6	14	9	" B. and D.J."	12	10	0
<hr/>							
120,695							

The three companies had also raised money by loans as under:—

	£
North Midland	815,450
Midland Counties	466,000
Birmingham and Derby Junction	300,000
Total loans Midland Railway	£1,581,450

In order that the Midland Railway Company could pay off these and carry out some necessary improvements, power was granted to reborrow and raise a sum of £1,719,633 on loan.

The Midland Company's main lines at the time of the amalgamation consisted of the following distances contributed by the companies as under:—

	Miles.
North Midland	72 $\frac{3}{4}$
Midland Counties	57 $\frac{1}{2}$
Birmingham and Derby Junction	48 $\frac{1}{2}$
Total main line	179

In addition to this there were several short branches to goods yards, cattle docks, and collieries, bringing the total up to about 181½ miles, of which 65 miles were laid on stone blocks, 115 miles on sleepers, and about 1½ miles on bridge rails, passing over viaducts and bridges.

By the amalgamation a great saving in the cost of administration was effected, as well as an enormous saving in working expenses, and the Midland Railway became the largest railway corporation with the



THE MIDLAND HOTEL, DERBY.

greatest length of line of any company then in existence. It was indeed a most memorable occasion, as it marked the beginning and the birth of the great combinations which were afterwards to become such powerful factors in the commerce of the nation. It was the first important amalgamation in the history of the railway world, and it gave a new impetus to and laid the foundation of all the enormous extensions not only on the part of the Midland Company itself, but it was also an object lesson in combination which exercised an influence in railway affairs beyond all calculation.

CHAPTER VIII.

A POLICY OF EXPANSION

THE Midland shareholders held their first General Half-yearly Meeting on Tuesday, July 16th, 1844, at Derby, when the Chairman, Mr. George Hudson, presided; and he was able to point out that the receipts for the half-year to June 30th had increased by £21,000, working expenses had been reduced by £9,000, and further reductions would follow when the salaries of many members of the three staffs would cease. He at the same time expressed regret that many useful and valuable officers had to leave their service. He also added that the dividends declared were proofs of steadily advancing prosperity, and that the return for the week which had just been made up showed a revenue amounting to £10,152. The Chairman afterwards submitted a resolution authorising the directors to take steps to obtain powers in the next session of Parliament for the construction of two lines of railway from the present main line of the Company—one commencing near Swinton, and proceeding by Doncaster, Bawtry, and Gainsborough to Lincoln, the other commencing at Nottingham, and proceeding through Newark to Lincoln. The object of these lines was to connect Lincolnshire and the whole of the adjacent eastern district with the West Riding of Yorkshire and Lancashire, on the one hand, and with Birmingham, Staffordshire, and the midland and western parts of England on the other. The resolution also proposed to obtain powers for extending the Midland system from Lincoln to the Eastern Counties Railway at March *viâ* Boston, and northwards from Lincoln to the York and North Midland Railway, thus supplying to every important town in the Eastern Counties good local communication, and also convenient access to London and the north and west of England. The proposed line from Swinton to Lincoln had been some time under consideration; the only new part was that from Lincoln to March. The line from Swinton to the York and North Midland Railway would be made, if agreed to, by that Company. He believed these extensions would bring a large

amount of traffic upon the Midland Railway, and in making them he thought they would be acting wisely and prudently. They had undergone the most attentive investigation by the Board of Directors, who were unanimous in recommending their adoption by the proprietary. All that was then asked was power to make the necessary surveys. He had no doubt of the lines paying a fair dividend, and was sure they would better accommodate the districts passed through than any local company could do.

A discussion ensued, in which the projects were warmly defended. They were deemed necessary as a protection against other undertakings, and were considered, independently of that, likely to be most beneficial to the Midland Company. When completed the whole of the eastern part of the country would be amply provided with railway accommodation. The Great Western Railway was pointedly alluded to as resorting to the plan of making extensions on the ground of protecting the interests of that line. The Chairman further said that "the days of discount" had, as regarded the Midland line, gone by.

The resolution empowering the directors to take the necessary steps as to the proposed extensions was carried with only one dissident. One of the first steps after the amalgamation was the construction of a curve north of Derby, which enabled through trains from Leeds and the north to run to Leicester and Rugby without entering the station at Derby. Further, by adopting the shortest route to Rugby, the Whitacre and Hampton Branch became of little use, and this branch, which played such an important part during the early struggles, is now of so little practical utility that the entire service consists of one passenger and one goods train in each direction per day. The passenger service closes at 9.30 in the morning for the day, and there are no trains whatever on Sunday, the line being closed from 9.30 a.m. on Saturday till Monday morning.

To fully appreciate the position of the Midland Railway as it was at the time of the amalgamation, and to understand the policy which was followed by the Company in after years, we must carry our minds back to May 10th, 1844, and examine the circumstances as they then existed.

The London and Birmingham, Midland, and other railways working in direct connection, regarded the main line from Euston Square to Rugby as the great trunk of a vast tree, whose branches and continuations should extend north, east, and west, and cover the country to Edinburgh *viâ* Leicester and York, Glasgow *viâ* Stafford and Carlisle, and Ireland *viâ* Crewe and Holyhead. In fact, maps existed upon which were drawn the proposed branches, extensions, and new

railways which would give communication with every part of the north of England *viâ* that great railway centre, Rugby.

Here was a clearly defined policy for supplying railway communication which had been carefully worked out and drawn up by the best railway and business men of the day. We may, therefore, ask why the plan should be upset or why it should not be carried out completely? The answer to these questions will be found in the fact that in the autumn of 1843 the money market was easy; money was abundant, many investments proved unfruitful, and the attention of the "City" began to turn to railway promotion as a branch of speculative finance. "City" men studied the railway map of England to look out for a route for a railway that would be likely to pay them as a speculation; and certainly in 1843 there was ample scope for financiers to make lines to large towns which were then unprovided with any railway communication without entering into schemes which were purely competitive and speculative in their character.

The London and Birmingham and Midland Railways were well able to carry their traffic, but the "City" men decided to get up a London and York scheme, and introduced a Bill asking for powers to make a new main line from London, King's Cross, which should run practically side by side with the Midland and flank it from one end of its length to the other; and from which railway it was intended to make branches, or other lines promoted in its interests, to extend into all the centres of the Midland traffic. Railway speculation quickly developed into the "railway mania" which commenced in 1843, was continued in 1844, and arrived at its height in 1845, during which thousands of persons were ruined by the absurd rush for shares.

Speculators promoted companies to make, or pretend to make, railways in every possible direction and to attack every existing company, especially the London and Birmingham and the Midland.

Under these circumstances the Midland Company saw that there could be but one policy, namely, a bold fight for existence, and that the only course left open to them was to defend their property to the utmost of their power, firstly by offering the most strenuous resistance to the London and York Bill in Parliament, and secondly by the construction of branches extending to Lincoln, Peterborough, and other districts through which the London and York scheme desired to pass. The parliamentary battle was a furious and most expensive one. Mr. Hudson, the Midland Chairman, very properly left no stone unturned to protect the interests of the Midland. It was stated before the Commons Committee that Mr. Hudson was working with a "twelve-counsel power." This, however, was not a fact, five being the number

which watched the London and York Bill. It became known to Mr. Hudson that £29,000 worth of London and York shares had been signed for by persons who did not exist or could not be found, and that £44,500 was signed for by men of straw, possessing no money or property, and who had been paid a small sum to lend their names.

Look at the matter how we will, the transaction was "not straight," and the House of Lords Committee evidently came to the conclusion that it must "draw the line somewhere," and consequently most properly reported that the London and York Bill should not be read a second time in that House until further investigation had been made into the contract, and the Bill was therefore held over until the next session.

Mr. Hudson, on behalf of the Midland, expressed the strongest indignation against the London and York Bill. He fought with a united Company behind him to the full extent of his power, but he was perfectly aware that the "financiers" had powerful friends and interests in Parliament, and it was no secret at Derby and on the Midland that the London and York Bill would be passed, or, more correctly speaking, be "forced through the House." Consequently it was no surprise to the Midland shareholders to learn that on June 26th, 1846, the Royal Assent had been given to the London and York Bill. The Great Northern Company afterwards constructed under the powers conferred by this Act a railway commencing at King's Cross Station, London, passing Hitchin, Peterborough, Newark, and terminating in a field about four miles north of Doncaster and about 160 miles from London, at a point now known as Askern Junction, where it joined, or was to be joined, by the Wakefield, Pontefract, and Goole Railway, now a portion of the Lancashire and Yorkshire system.

The delay of a year which took place in the passing of the Great Northern Act enabled the Midland Company to push on with two of its extensions, both of which received the Royal Assent on June 30th, 1845. One of these was the Nottingham and Lincoln line, which was a continuation of the Trent and Nottingham section of the old Midland Counties. This extension passed Rolleston Junction, Newark, and terminated at Lincoln, a distance of 33 miles. There was also constructed a short branch of about 2½ miles from Rolleston to Southwell.

At Lincoln it was intended, either by extension or by another system, to continue the communication to Grimsby and New Holland for Hull. The Nottingham and Lincoln line was formally opened

on August 3rd, 1846, and it is a strange fact that Parliament ever permitted the Great Northern to afterwards make the unsatisfactory level crossing at Newark which exists to this day, instead of passing over the Midland by a bridge, as it should have been required to do.

On Monday, August 3rd, 1846, the Midland directors, with a large number of friends and proprietors, opened the Lincoln line. Special trains ran from Derby and Leicester to Nottingham, the former starting at 8 a.m. They left Nottingham at 9.26 and 10.15, the first reaching Lincoln at 10.51 after calling at Newark. These trains left Lincoln again about 12 and 12.30, consisting respectively of thirty-five carriages, of which sixteen were first-class. They reached Nottingham about 1.30, where a luncheon was provided, "combining every possible delicacy, with a profusion of champagne and other choice wines." It was laid out in the engine-house, which had been enlarged and beautifully decorated. George Hudson presided at the lunch, "which was a very gay affair." At 2.50 and 3.15 the trains went down to Lincoln for the second time amidst a violent storm, which continued almost all the way. In the evening there was a dinner at Lincoln, at which Hudson again presided and the Lord Mayor of York and the mayors of Nottingham, Newark, and Lincoln were present. The return train left at 9.10, reaching Nottingham at 11.10 p.m., whence expresses ran to Derby and Leicester. The line was inspected by General Pasley on July 31st, whose report as to the construction was highly gratifying. Nevertheless, a bad accident happened near Gonalstone crossing, between Lowdham and Thurgarton, a few days after, clearly due to the breaking of an engine spring owing to the sinking of the road. The engine was upset in a ditch and the fireman killed.

The festivities at the opening passed off well, though the weather was very bad and a man received fatal injuries at Lincoln from the bursting of a cannon. The line was constructed in eight months, by John Craven and Sons, contractors, of Bingley. Public traffic commenced on the following day, August 4th.

The extension to Lincoln necessitated the construction of new station buildings at Nottingham, which was previously a terminal station. The buildings, although then regarded as fully adequate for all requirements, in the course of time required considerable extensions, and after having been in use for over half a century, they are now being replaced by a handsome and very costly structure.

The other Act of June 30th, 1845, gave power to construct the Syston and Peterborough branch, which was to commence by north and south curves at a point about five miles from Leicester, thence bending in various directions to catch the towns, namely Melton Mowbray,

Oakham, Luffenham, Stamford, and most important of all, to form a junction with the intended Eastern Counties Railway at Peterborough, the Midland trains to have running powers into that Company's passenger station and goods yard there. The projected Syston and Peterborough line was intended to run through part of Lord Harborough's Stapleford Park at Saxby, but that nobleman objected to the railway coming through his estate; and further, he was considerably interested in the Oakham Canal, which was originally opened in 1800, and which he feared would be injured or rendered useless by the railway. Notice was therefore given that "surveyors would not be permitted to enter upon his land."

The surveyors, however, proceeded along the canal bank, but one of Lord Harborough's keepers stopped the assistant carrying the chain. This person produced a pistol and threatened to fire, to which the keeper replied, "Shoot away!" This terminated in what is known as the "Battle of Saxby." The surveyors were put into a cart to be conveyed before a magistrate, but ultimately the cart was tipped up and they and their instruments were shot out, and it is said that some of the surveyors were conveyed to the gaol at Leicester. Ultimately it was found necessary to collect a strong gang of navvies, who, headed by two or three prize-fighters from Nottingham, walked through Lord Harborough's estate, followed by the surveyors, when no resistance could be offered by the keepers.

It appears that this memorable trouble began on a small scale on November 13th, 1844. Lord Harborough and his steward, Mr. Fabling, had given notice to the Railway Company that they would *not* permit anyone to enter Stapleford Park and lands to survey. The railway men were seven in number, and were about to approach the forbidden ground by the Oaknam Canal towing-path. Lord Harborough's party of nine met them and took them prisoners. They were conveyed, with their flagstaffs, chains, and spirit-level, towards Cold Overton Hall, the residence of T. F. Turner, Esq., a magistrate. Mr. Turner was from home, but the head keeper informed his prisoners they might separate for the night, which they did.

Another skirmish, however, took place next day, November 14th. The scene of action was Saxby Bridge, adjoining Lord Harborough's park. A renewed attempt being expected, by 9 a.m. between thirty and forty of the Earl's men assembled there to prevent it. Very soon parties of gentlemen in the employ of the Company arrived in chaises, etc., from Melton and Oakham, heading a number of "reckless-looking vagabonds," carrying flagstaffs, etc., looking in the distance very like a regiment of soldiers coming to take the place by storm. A

lengthened parley took place on the bridge between his lordship's steward and solicitor, the clerk and treasurer of the Oakham Canal Company, and the solicitors of the Midland Railway, as to the mode of proceeding to be adopted. Meantime, Lord Harborough's men prepared for a determined stand by fencing the paths with drays, etc., close to the water's edge. An attempt was then made by the surveyors to force their way through the party stationed on the Oakham side of the bridge, but the barrier was too firm to be broken, and they had to retreat. After this some delay took place, during which both sides received reinforcements. Four or five of the County Police also came up, and stated that they should arrest the first person who committed an assault. Both parties were then desired to lay aside their weapons, which consisted of stout shillelaghs, and ordered not to strike any blows, but to try their relative strength by *pushing*. A grand stand was then made by Lord Harborough's party below the bridge, and nearest Melton, who stood wedged together and forming a living and very formidable barrier. The surveyors next placed rows of their men with their backs to the faces of the Earl's party, and set others in an opposite position to force the way. An almost indescribable scene now took place. The *railwayists* exerted their utmost strength, but so firmly did his lordship's party retain their ground that more than one was actually forced up high in the air, rolling over the heads of the contending parties. Others were forced through the hedge, tumbling over each other and nearly filling the ditch beneath, amidst the shouts of the leaders and the laughter of the numerous spectators. Great confusion now ensued, the two parties mixing together and in the tumult and dirt becoming almost undistinguishable by each other. In the midst of this confusion the surveyors succeeded in getting the chain on the forbidden ground. Lord Harborough's men then took forcible possession of it, and in the scuffle to recover it, it was broken in one or two places. A fine chase was then had for about a quarter of a mile down the tow-path, affording the spectators as much amusement as a fox-hunt. Another barrier was then about to be formed, when a truce was shouted by the railwayists, and it was finally agreed that each party should withdraw their forces, and that the matter should be judicially brought before the magistrates by issuing a summons for assault against one or two of the men of each party, which it was understood would be heard at the Petty Sessions at Melton on November 19th, the solicitors and surveyors of the Company pledging themselves that no further attempt should be made in the meanwhile.

The clerk and treasurer of the Oakham Canal Company were

present during the whole of the skirmish, sanctioning Lord Harborough's proceedings, they having some time previously given his lordship an exclusive right to the towing-path.

In spite of the above arrangement for a truce, the existence of which was denied by the railway party, a fresh attempt took place about 7 a.m. on Saturday, November 16th. Mr. William Latham, Lord Harborough's solicitor, hearing it was likely to happen, wrote informing the Railway Company's solicitors that he had barricaded the towing-path, and had in readiness a few cannon from Lord Harborough's yacht. About 7 a.m. a small party of railway men, about ten in number, attempted to take the tow-path at one point, whilst nearly a hundred more climbed over the palings nearer to Oakham and commenced measuring with three or four chains. Lord Harborough's men were dispersed, watching various parts of a park 800 acres in extent, and could not oppose them. They had got opposite his lordship's beautiful cottage, where he resided, when Mr. Fabling, the steward, came up on a pony, with some of his "troops." Mr. Cope, one of the railway party, told him to retire if he did not wish to be hurt. On refusal, his men were ordered to remove him. Mr. Fabling ordered the measuring chain to be taken up. Then followed a general free fight. Brown, the lock-keeper of the canal, a powerful man, rendered great assistance to his lordship, sending his opponents head over heels at every blow; the noise was so great it was heard in the villages two miles off. The spikes of the railway party were thrust into the sides of the defenders of the park, and after a battle of several minutes, and many broken heads, wounded faces and sides, the lower grade of the intruders gave way. At this moment his lordship appeared, accompanied by Lady Harborough, but being weak from a very severe illness, was not able to get near the scene of action. The noise having brought together more parties of his lordship's men, it was evident the railwayists must beat a retreat, their staves and chains having been broken into many pieces. Ten persons, whose names were taken, were not allowed by Mr. Fabling to leave till they had given them. Three navvies from Oakham were then brought up, after the hearing of the principal case at Melton, charged with having engaged in the affray on behalf of the Railway Company, but were only bound over to keep the peace for three months. Some other parties from Stamford were also bound over. As regards the main case, the Bench unanimously sent it to a higher court. "Thus terminated for the time the eventful contest between Lord Harborough and the Midland Railway Company."

Three cases arising out of this were tried at the Assizes at Leicester,

March 26th, 1845, before Lord Chief Justice Tindal and common juries. In the first case it was stated that on Saturday, November 16th, 1844, whilst it was yet dark in the morning, the defendants, with seventy or eighty people, came to the Earl of Harborough's park with measuring chains and flagstaffs, etc., and distinguished by white badges, with the evident determination to proceed with their survey. They were resisted by a considerable number of Lord Harborough's people, and after a severe struggle and fight were compelled to retreat. The Lord Chief Justice summed up with great clearness that parties assembling in the manner and under the circumstances shown were guilty of a riot, and were properly resisted by Lord Harborough's people, who were justified in using force to eject them from the park. The jury, without much deliberation, returned a verdict of *guilty* of an assault against all the defendants, who were sentenced to be imprisoned for one month and to pay a fine of 1s.

The second case, *Ward v. Lord Harborough and others*, was an action for trespass and false imprisonment and for damaging a theodolite. Lord Harborough's servants, after warning plaintiff and his followers off the canal tow-path, took him into custody, under a mistaken impression that they had power to do so. They permitted him to go away in his own carriage and used no violence, but the theodolite was pitched out of a cart and broken. The jury found a verdict for the plaintiff; damages, £8.

The third case, *Lord Harborough v. Ward and Cope*, was an action for trespass on the occasion of the riot. A juror was withdrawn on each side by agreement. The Lord Chief Justice then sentenced the defendants as stated above, the imprisonment to be in Ward No. 1, so that they would have no unnecessary hardship. He expressed his regret that persons of their education and profession should be engaged in a transaction which was quite unjustifiable in law, and which he was bound to visit with punishment.

All these proceedings were for trespass in connection with the attempts to make a preliminary survey and plans for Parliament; but, notwithstanding all these objections and obstructions, the Company succeeded in securing parliamentary sanction by their Act of June 30th, 1845.

During the passage of the Bill through Parliament, in order to appease Lord Harborough's objections, the Midland entered into an agreement with the proprietors of the Oakham Canal, of which Lord Harborough was a large shareholder, to purchase that undertaking. The agreement, which was dated April 19th, 1845, was incorporated in an Act of Parliament passed July 27th, 1846; and the proprietors of

the canal received "£26,000, together with 200 of the newly created £40 shares, making a total of £34,000."

By the Syston and Peterborough Act of 1845 the Company were empowered to make a tunnel under the Cuckoo Plantation in Stapleford Park. But immediately after the commencement of the construction of the tunnel, the object of which was to preserve the trees and the plantation, it was found to be too shallow, and the cutting of the tunnel destroyed the roots of the trees, and suddenly a large portion of the works fell in, dragging the trees with the débris. Sixty trees were thus uprooted and destroyed. The engineers were not to be blamed, in view of their having been prevented from making a proper preliminary survey, and they decided, as it was impossible to make the tunnel as sanctioned, to form an open cutting. This Lord Harbrough resented, and he brought an action against them for cutting down about sixty trees, oak, elm, and fir, of twenty-five years' standing, forming what was called Cuckoo Plantation, in Stapleford Park. By their Act the Company had power to make a tunnel at this point, without shafts, but proceeded, instead, to make an open cutting 106 yards in length. An injunction to restrain them was granted in the Vice-Chancellor's court, by Sir L. Shadwell, July 8th, 1846, his lordship considering this "a most oppressive case."

The Company were thus at an *impasse*—they had powers to construct a tunnel which could not be made and at the same time preserve the trees, and they also had an injunction restraining them from destroying the trees or making an open cutting.

They consequently decided to make a deviation line to dispense with a tunnel and to avoid the plantation entirely, but this laudable intention was only the signal for further warfare. So far from the deviation putting an end to the difficulties, Lord Harbrough obstructed the surveyors for the plans for the deviation quite as strongly as he had done the surveyors for the original line. Another fracas occurred on the 24th and a second on November 28th, 1845. This led to a trial in July, 1846, when the Company indicted Lord Harbrough and twelve other persons at Nottingham for conspiring to prevent Charles Liddell and others from taking surveys and making plans and sections which had to be laid before Parliament on November 30th, and further, for assaulting the said Charles Liddell and others. A deviation from the Act obtained in 1845 for the construction of the Syston and Peterborough Railway was found necessary. It was alleged that his lordship ordered the surveyors off his land and engaged people to obstruct them. He himself drove a gig up and down the high road whilst the surveyors were engaged with the theodolite, and persons who

were in his employ carried sheets of calico, ran against the railway men—who were about 150 in number—and caused a general uproar. Lord Harborough also drove a brake against the surveyors' chaise, but there was no direct evidence of any further assault upon the persons of the surveyors or their assistants. After a trial of upwards of five hours' duration the jury returned a verdict of "Not guilty" on July 24th, 1846.

These disputes with Lord Harborough caused great delay, and necessitated another Act of Parliament being passed on June 18th, 1846, authorising a deviation from the original plans. Terms were arranged with Lord Harborough which ultimately got rid of all the difficulties. The portion of line from Syston to Melton was completed and opened on September 1st, 1846, and the Stamford and Peterborough section was ready, but the Midland Company had no means of getting to it, and could not convey either engines or carriages to this bit of line. It was therefore decided that the Eastern Counties Company's trains should open and work the Peterborough and Stamford line from October 2nd, 1846, until such time as the intermediate Melton and Stamford division should be completed.

Finally, the Syston and Peterborough branch, which added $48\frac{1}{4}$ miles to the Company's system, was opened from Syston to Melton Mowbray on September 1st, 1846; and at the other end of the line the portion from Stamford to Peterborough and the junction with the Eastern Counties Railway was opened on October 2nd, 1846. But the intervening section of the line between Melton and Stamford, in consequence of the dispute with Lord Harborough, was not ready till March 20th, 1848, when it was opened for through coal traffic, and on May 1st of the same year for passengers. But although the line was thus finally completed and opened, it was not so satisfactory as that according to the original plan, for it necessitated what is known as "Lord Harborough's curve" at Saxby, which was too sharp for fast running, and had many years after to be modified.

CHAPTER IX.

EXTENSIONS AND PURCHASES

HAVING traced the history of the formation and the consolidation of the three parent lines and their unification in the existing Midland Railway Company, we now come to consider the policy of expansion which followed. First of all came the making of its two primary extensions to Lincoln and to Peterborough, which was succeeded by the introduction of another policy of vast and far-reaching importance, namely, the enlargement of the system, not only by making new lines to districts not touched or only very partially served by railway communication, but by purchasing, leasing, or otherwise acquiring the properties of other independent railway companies with the view of building up a more extensive and important railway system. The object of this was, of course, to secure traffic as well as greatly to facilitate through traffic alike to the benefit of traders, passengers, and the Company. The result of this policy was again to confirm what had been demonstrated by the original consolidation of the parent lines, namely, that a large company could deal more advantageously with traffic than could numerous small ones.

The first of the companies so acquired was the Sheffield and Rotherham, which had been constructed some years previously.

At the suggestion of Mr. George Stephenson, the inhabitants of Sheffield took in hand the formation of a local railway company, and by virtue of an Act passed on July 4th, 1836, constructed the line from the Wicker Station, Sheffield, past Brightside and Holmes to Rotherham, a distance of $5\frac{1}{2}$ miles, also a short connecting line known as the Greasborough branch, extending from Holmes to join the North Midland Railway at Masborough Station.

The Sheffield and Rotherham line was formally opened on Wednesday, October 31st, 1838. On the arrival of the first train from Sheffield a breakfast took place at the Court House at Rotherham soon after 11 a.m. Earl Fitzwilliam and several members of his family travelled by this train. The Earl was more than half an hour late in reaching

the Sheffield Station, so that it was 10.40 instead of 10.10 when the first train left Sheffield. The Chairman, Mr. Wm. Vickers, the directors, their guests, and proprietors holding the largest number of shares went by it. It was to return at 11 with the Rotherham proprietors and the public, admitted by gratuitous tickets. Several journeys to and fro were to be made, each train being computed to carry 300 persons. The carriages, "of which those called first-class were exceedingly beautiful and well fitted up," were manufactured by Messrs. Richard Melling and Co., of Green Hayes, near Manchester. Several "of what are termed second-class carriages" had been procured from Bolton for the occasion. Along the entire line "parties were stationed for the purpose of preventing accidents, by keeping spectators off the railway." Only three engines were in use at that time, all by Stephenson and Co.

Mr. Wm. Vickers, the Chairman of the Directors, presided at the breakfast, at which George Stephenson was present. The latter, returning thanks for the toast of his health, said he never was an advocate for unfavourable gradients; he wanted low levels. Surrounded as the town of Sheffield was by hills, it was impossible to get out of it except by going to Rotherham. He defied them to do it. If Mr. Leather came to cut through those hills it would never do; he would be disappointed. He had great pleasure in seeing the works so well executed by a pupil of his.

Sir Gregory Lewin, standing counsel to the Sheffield and Rotherham Railway Company, wondered if Mr. Stephenson would say the same in private. He thought he would say that mountains never stood in the way of an Englishman. He then proposed the health of Robert Stephenson, who was not present. George Stephenson, replying, said he had had to sit up night after night to earn 3s. to send him to school, and thought there was never a father who had more pleasure in a son than he had in his.

It will be observed that George Stephenson defended his dictum regarding gradients and his policy of constructing the North Midland line *via* Staveley instead of over the hills from Chesterfield to Sheffield. It is all very well to say that mountains never stand in the way of Englishmen; but time and experience have more than justified the position taken up by Stephenson, for although the line which was originally pressed upon him from Chesterfield to Sheffield has actually been constructed in spite of the severity of the gradients and the heavy tunnelling required, still these add immensely to the cost of working as well as reducing the speed of ascending trains. The soundness of Stephenson's opinion, from an engineering point of view,

is proved by the fact that at the present day one of the Midland modern engines is capable of taking a heavy train from Chesterfield to Masborough *via* Stephenson's Staveley line, whilst it requires two engines to take the same train over the more difficult gradients on the Chesterfield and Sheffield direct route. Thus it is that, notwithstanding the great importance of Sheffield and its traffic, some of the Midland expresses at the present time travel over Stephenson's Staveley route.

At the public opening of the line next day (November 1st, 1838) about 1,000 ordinary passengers travelled over the line. One of the trains, namely, that leaving Sheffield at 4 p.m., was drawn by the engine "Victory," with George Stephenson on the footplate, and it accomplished a remarkably good run. This train covered the distance in nine minutes forty-five seconds, and Stephenson expressed the opinion that it could easily be done in seven or eight minutes when the embankments had consolidated.

The Company at once gave a very good train service, and its time-table was the most simple possible, namely:—

"From Sheffield—Every hour from 8 a.m. to 8 p.m.
From Rotherham—Every hour from 9 a.m. to 9 p.m."

As this line was the only route which the Midland Company could use for its Sheffield traffic, it became evident at the time of the railway mania that it must not by any chance be allowed to fall into other hands. It was therefore decided that it should be vested in the Midland, that Company to issue Sheffield and Rotherham Preferential Stock, paying 6 per cent. in perpetuity on the share capital of £150,000, which stock continued until its conversion under the Act of 1897.

The Act for vesting the line in the Midland was passed on July 21st, 1845, at which date the small Company ceased to exist, and its nine directors went out of office. Their names should therefore be here recorded, namely, Chairman William Vickers, Deputy-Chairman G. W. Chambers, Messrs. B. Vickers, W. Jackson, J. Wilkinson, J. Spencer, W. Bradley, A. McTurk, and G. Knowles, all being well-known local business men.

By the Act of Parliament the holders of the Sheffield and Rotherham Preference Stock enjoyed the privilege of having their dividends paid by the Midland Company "before and in preference to any dividends in respect of any other shares or stock whatsoever."

On acquiring the line the first step that the Midland took was to construct a short curve extending from the Wicker Station at Sheffield to Bridge Houses Junction, thus giving a connection with

the Sheffield, Ashton-under-Lyne and Manchester Company's system at Sheffield. By this means the Midland secured a second means of forwarding traffic from its system to Manchester, the only other route formerly available being to hand over the traffic to the Manchester and Leeds Company at Normanton.

No sooner was the Midland Company formed in 1844 and the rival interests of the early companies removed, than our old friends, Messrs. Oakes, Jessop, and the Nottinghamshire coal owners, naturally came to the front once more with their scheme for a "Pinxton branch," which, it will be remembered, had to be left out of the original Midland Counties Bill. This time, however, they decided to form an independent Erewash Valley Railway Company of their own, and to make a line from Pinxton, joining the Midland at Trent and Long Eaton junctions. The Midland Board came to the conclusion that the Erewash Valley was much too rich a district to be under the control of any other company, more especially as by the construction of an extension from Clay Cross Junction to Pye Bridge Junction a direct main route could be made from Clay Cross to Trent, which would reduce the distance from the north to Leicester, Rugby, and London, thus relieving the line *via* Amber Gate and Derby of much of its heavy traffic. During the time that the Bill for the construction of this line of about twelve miles was before Parliament negotiations were opened between the two companies, which resulted in the Midland agreeing on February 14th, 1845, to take over the Erewash Valley Company and to guarantee a dividend of 6 per cent. upon its capital of £145,000; and the Act for the formation of the line and confirming the agreement between the parties received the Royal Assent on August 4th, 1845. The line was constructed, and opened for public traffic on September 6th, 1847, and on that day trains ran from Codnor Park to Long Eaton Junction, giving communication with Nottingham and Leicester.

In making this line it crossed on the level the Derby and Nottingham section near Long Eaton. This was known as "Platt's crossing," and proved a very unsatisfactory arrangement, which some years later had to be altered by the formation of two new curves at Trent, which rendered the crossing unnecessary. This new arrangement came into operation on May 1st, 1862.

CHAPTER X.

GREAT RIVAL SCHEMES

DURING the height of the great railway mania in 1846 the Midland Company was fiercely assailed by rival schemes in every direction, and the very existence of the Midland was threatened. It was impossible to stand still and allow these great schemes to compass the ruin of Midland traffic, and consequently a very far-reaching policy was adopted in order to protect the interests of the shareholders. The policy adopted was essentially a fighting one, namely, by invading or threatening to invade other districts by making competing lines of their own or by purchasing others. In those cases where their rivals proposed to buy up small lines in the Midland district the Midland Company determined to itself purchase these undertakings.

These great proposals involved an expenditure of something like £11,000,000; but the course pursued proved to be of the soundest character, and it established the Midland Company in a position of independence of all rivals.

These enormous proposals were embodied in no less than twenty-six parliamentary Bills, the whole of which came before a meeting of the shareholders at Derby on May 2nd, 1846. This proved by far the most eventful Midland meeting ever held. Mr. George Hudson, M.P., presided, and as the sums involved were exceptionally large, and the bills related to great extensions over a large part of England, it is necessary to set out the schemes in detail and to give the "Railway King's" own explanation of the Midland policy.

The projects included the following :—

1. A deviation of the Syston and Peterborough branch at Saxby, to overcome the objections of Lord Harborough, at a cost of £85,000.
2. The "vesting" of the Leicester and Swannington Railway in the Midland, and taking over its capital of £140,000 at 8 per cent.

3. To extend the Leicester and Swannington to the Midland system at Burton and Leicester at a cost of £461,000.

4. To purchase the Ashby Canal and tramroads at a cost of £110,000, and to make a railway by the side of the canal from Ashby to Nuneaton at a cost of £656,000.

5. To purchase the Oakham Canal at a cost of £26,000, in order to overcome the objections of Lord Harborough, in addition to the deviation (Scheme No. 1).

6. To construct a railway from Pye Bridge to the Midland system at Clay Cross, to be known as the Erewash Valley Extension, at a cost of £230,000.

7. To make a new line from Nottingham to Mansfield at an outlay of £275,000.

8. The construction of a branch from Chesterfield to Newark at a cost of £550,000.

9. To construct a branch line from Swinton to Doncaster at a cost of £140,000.

10. To construct a branch from Darfield to Elswick, costing £150,000.

11. To construct a curve, connecting the Company's line at Saltley with the London and North Western Railway at Curzon Street, Birmingham, at a cost of £80,000.

12. To construct a line from King's Norton to Halesowen at a cost of £150,000.

13. To construct a branch from Ashchurch to Great Malvern at a cost of £180,000.

14. To construct a Midland narrow-gauge line from Gloucester to Standish Junction, near Stonehouse, and to enable the Company to complete the narrow gauge through to Bristol, at a cost of £100,000.

15. To construct a branch from Mangotsfield to Bath at a cost of £260,000.

16. To consolidate the Bristol and Gloucester and the Birmingham and Gloucester companies with the Midland on the payment of 6 per cent. per annum on their capital of £1,799,902 15s.

17. To vest £600,000 in the South Midland Railway Company in their line from Wigston to Hitchin.

18. To vest £285,000 in the Manchester, Buxton, Matlock, and Midlands Junction Railway.

19. To construct a branch from Hampton to Ashchurch.

20. To construct a branch from Hampton to Banbury.

21. To construct a branch from Worcester to Alcester. The schemes

No. 19, 20, and 21 were in conjunction with the London and Birmingham Company, the Midland capital being £600,000.

22. To subscribe £120,000 to a line from Wolverhampton and Dudley to Wichnor Forge.

23. To construct branches in the Erewash Valley at a cost of £195,000.

24. To construct a line from Swinton to Lincoln at a cost of £800,600.

25. To construct a line from Newark to Gainsborough at a cost of £250,000.

26. To construct a line from Southampton to Swindon at a cost of £400,000.

In explaining these complicated projects and the general policy which they involved, and commending their adoption by the shareholders, Mr. Hudson, the Chairman of the Company, had practically the unanimous support of the great bulk of the proprietors, although in this, as in almost all similar circumstances, there were those who protested against "any increase of liabilities." He informed the meeting that proxies had been received for £4,500,000, and that with the support of those present they had votes representing £5,000,000 or £6,000,000 out of £7,000,000 of stock. Whilst the directors felt gratified by the confidence reposed in the Board, they recognised the very heavy responsibility involved. The course which they would recommend would be that which appeared to be consistent with a sound view of each case, and although it might be wise to reconsider their position with regard to some of these proposed undertakings, it would be unwise to abandon any undertaking which was useful or which would tend to the security of their property. He admitted that some of the new projects might not be paying lines if they stood by themselves, but as parts of a great system they would be remunerative; and on the other hand, if they belonged to a hostile company, they would be a source of injury to the Midland. He recommended the construction of those lines because he believed they would pay them, though they would not pay an independent company. They had never projected a line which they did not believe would be remunerative to the shareholders. The directors called upon the shareholders to repose confidence in them, adding that he did not think that anything had occurred which need alarm a constituted company. Circumstances might occur which would render it expedient to abandon part of those schemes; still, he would recommend the shareholders to confide in the discretion of the Board, who had a large interest in the Company. They did not wish to act upon

the feelings induced by a panic, but upon calm judgment; and it would certainly be unwise to forsake really good undertakings because of temporary alarm. They did not pledge themselves to carry the whole of the Bills, but called upon the meeting to give its vote in their favour, leaving it to the discretion of the Board whether they abandoned any; or, if they continued them, to obtain as long a time as possible for their execution and for taking possession of the land. He was quite satisfied that those undertakings must progress.

In going through the whole of the Bills the Chairman further pointed out that the purchase of the Ashby Canal and the construction of a line was a measure of a protective character. Parliament viewed with some jealousy the purchase of canals by railway companies, but this was one of those Bills which they must leave to the discretion of the Board. The purchase of the Oakham Canal, they hoped, would obviate Lord Harborough's objections to the carrying out of the Syston and Peterborough as originally sanctioned. If Parliament authorised them to shut up the canal, there would be the land and several extensive corn warehouses at Oakham to dispose of.

The branch from Pye Bridge to Clay Cross, known as the Erewash Valley Extension, gave a short and direct route north and south between Trent and Clay Cross and avoided the detour *viâ* Derby. It also provided better means for dealing with the mineral traffic in the district, as well as also opening up new coalfields to the Midland.

The Bill with regard to the Nottingham and Mansfield line, he explained, would shorten the distance between those two towns and to the north of England. "Other parties" were competing for a similar line, and the Midland desired to negotiate a satisfactory arrangement.

With regard to the Bill for a branch from Chesterfield to Newark, connecting the first-named place with Boston, there had been an opposing line, which was thrown out the previous year upon its merits, and this session upon the standing orders, so that the Midland Company had the Bill in their own hands. He thought it important that they should have that district of the country, as tending to bring down upon their line the whole trade of Lincolnshire and enabling them to compete successfully with the London and York. It was not a very cheap line, the expense being £550,000; but it was expected to prove remunerative, and, besides, was absolutely necessary for their protection. It had been very much supported locally, and was one of the first lines they would have executed.

Dealing with the great sets of schemes having reference to the

extension of the Midland system to the west of England, the Chairman explained the importance of the Bills which consolidated the Bristol and Gloucester and the Birmingham and Gloucester Companies' railways with the Midland system. He further pointed out that the new line from Gloucester to Standish Junction, Stonehouse, and the laying of the mixed gauge by the addition of a third rail from Standish to Bristol, with the construction of a new line on the narrow gauge from Mangotsfield to Bath, would give the Midland through communication from the north to both Bristol and Bath without change of carriage. The King's Norton to Halesowen branch arose out of their having leased the Birmingham and Gloucester line, and the construction of the branch from Ashchurch to Great Malvern arose from the same cause and was devised as a feeder to the line.

With regard to the Midland subscription to the South Midland Company, he pointed out that the Midland had invested £600,000 in that undertaking.

He believed the line from Wigston to Hitchin ought to be constructed, and that it would be advantageous for them to possess an interest in it because it would give them a communication with that district, and also with London. It would be of great advantage to them to have two means of carrying their traffic. The line was one which the Company would at some future time have had to execute had it not been locally taken up. He thought they ought not to abandon it, but to continue their subscription to the undertaking.

Proceeding to deal with the Bill for making the Manchester, Buxton, Matlock, and Midlands Junction Railway, he explained that the Midland had £270,000 in that undertaking. This new Company's line would give them, besides a communication with Matlock and Buxton, another route to Manchester, over which they would possess a certain control. There would likewise be a large traffic upon it, which would add to the receipts of the present line. There were some difficulties in the way of its construction, but he had learned that they would be overcome at a great deal less cost than had been expected. The Midland Company might easily dispose of their interest afterwards, if they did not think proper to retain it. The Manchester and Birmingham Company had taken shares to nearly the same amount as themselves.

The opposition to these great proposals was led by Mr. O'Brian, who urged that several of the branches proposed were simply for the purpose of occupying the ground, so as to prevent other people taking their traffic.

Mr. Franklin stated that he opposed these Bills because he thought

they had too much on their hands already; besides that, the time allowed them to consider each Bill was much too short. If they had been brought all the way from Van Diemen's Land it might have been reasonable to have thrown such a quantity of business together for one meeting, but such a proceeding was not called for by their circumstances.

The whole of the Bills, however, were approved.

The Chairman, in answer to a question, stated that the capital wanted would be three millions, or about two millions more than they had already power to raise. The directors had watched with great anxiety the state of railway property in the country. He had warned the public against the mode adopted in getting up lines, namely, that of taking a map, drawing a line across it from one town to another, issuing a prospectus, and getting capital. In all such cases the result had followed which might have been anticipated—much distress and difficulty. He was afraid that though the resolution proposed by Government for putting a stop to many of those undertakings was framed in a kind spirit, with an anxious wish to relieve those parties who had been so unfortunate as to involve their capital in undertakings which were not secure and good in themselves, yet that it would not be the remedy required by the extraordinarily excited state in which their railway engagements had been made. No observations that might be made could apply to their own meeting, as they came together in a corporate capacity, no scrip shareholders being represented, but only parties holding the stock of the Company. Cases occurred in which companies came upon parties for money when the calls had actually been paid up. He believed the Government were anxious to give relief if proper representations were made. He had thought it right to make those observations on the first public opportunity afforded him, in order that they might find their way to the public.

Thus ended a meeting which must ever be memorable in the history of the Midland.

Although the Midland policy at this period was of the most advanced character, the vast importance of the traffic to Manchester had not been fully grasped, or the Chairman would not have alluded to the possibility of the Midland disposing of their interest in the Manchester, Buxton, Matlock, and Midlands Junction Railway; and it is certainly remarkable that he should have placed before the proprietors an inducement to invest £270,000 in an undertaking without any determination to maintain their hold on a line which has since proved of such inestimable value to the Midland Company.

It will be observed that the financial difficulties were to be met by three methods—first by means of the issue of new share capital, second by the raising of loans, both of these for the construction of the new lines, while the purchase of old lines was generally by means of leases and the guaranteeing of dividends on the existing shares, so that the former shareholders became holders of guaranteed stock in the Midland Company, and they were thereby assured of a fixed and definite return on their investments.

When these schemes came before Parliament a long and fierce conflict ensued, which resulted in fifteen of them receiving the Royal Assent ; three failed, seven were withdrawn, and one was held over at the instance of the House of Lords, pending the settlement of the question of gauge.

Although no less than ten of them were withdrawn or failed to pass, it must not be supposed because of that circumstance that the proposals contained in them failed in their purpose, because their objects were achieved by other means, such as concessions, and running powers in some cases, whereas in others they compelled the withdrawal of competing schemes.

The carrying out of this great policy of expansion necessitates the description of the salient characteristics of the undertakings to which they refer, and how they came to be constructed.

CHAPTER XI.

THE ASHBY-DE-LA-ZOUCH CANAL AND TRAMROADS AND THE LEICESTER AND SWANNINGTON EXTENSION

WITH a view to placing the western side of the county of Leicester in direct communication with London, steps were taken in 1793 to form the Ashby-de-la-Zouch Canal, to provide facilities for the conveyance of coal, lime, and other minerals.

A provisional committee instructed Messrs. Jessop and Whitworth, two of the leading engineers of the day, to prepare plans and lodge a Bill in Parliament. The scheme commenced in a junction with the Coventry Canal at Marston Bridge, near Bedworth, Warwickshire, and running to a basin to be constructed at Willesley, near Ashby-de-la-Zouch, Leicestershire, and from thence branching and continuing in one direction to the termination, one mile north-west of Moira Baths, at a distance of thirty miles from the Coventry Canal, with further extensions from Moira to coal mines at Swadlincote and Church Gresley; and in another direction passing through the town of Ashby to the Ticknall Lime Works, Derbyshire, $8\frac{1}{2}$ miles, and having a further branch to the Cloud Hill Lime Works of about $4\frac{1}{4}$ miles.

After the plans were duly lodged, and during the winter of 1793-4, it became evident that the number of locks required to get up from Willesley Basin to Cloud Hill would be very costly, and, furthermore, water could not be obtained for that section of the canal. On February 24th, 1794, the engineers presented their estimates, and advised the committee to adopt edge-rail-ways for the two sections to which reference is above made.

Consequently during the time the Ashby Canal Bill was before the House the following Clause 18 was added :—

“ And be it further enacted, that if the said Company of proprietors shall judge it expedient that boats or other vessels, wagons or other carriages should be conveyed over or along any part or parts of the line to be pursued in making the said canal, or cuts or branches, by rollers, inclined planes, or in any other manner than by water,

then, and in such case, it shall and may be lawful for the said Company of proprietors to cause any rollers, inclined planes, or other works to be made for that purpose at such place or places in the said line as they shall think proper, and the same shall be considered to be part of the said works hereby authorised to be made in like manner, and to all intents and purposes as if such parts or places were made navigable."

The Act for the making of the Ashby Canal, and including Clause 18, was passed on May 9th, 1794.

The work was at once put in hand, and the directors constructed the main line of the canal from Marston to Moira and Ashby Wolds, 30 miles, perfectly level, without any locks, but by virtue of the clause in the Act they laid tramroads from Willesley Basin to Ticknall Lime Works, a distance of $8\frac{3}{4}$ miles, and the branch to Cloud Hill, about $4\frac{1}{4}$ miles, also five short branches to Moira, Lount, Park Wood, Swadlincote, and Church Gresley collieries were also tramroads.

Messrs. Jessop and Whitworth, the engineers, advised the directors to lay down the "Jessop-edge-rail-way," and adopt the flanged wheels, and they had decided to do so, when Mr. Benjamin Outram, of Butterley (the father of General Sir James Outram, of Indian fame), arrived on the scene and had several interviews with the various directors; and at the next meeting, after a severe fight, it was resolved and ordered that the lines should be laid with "tram-plates," to be three feet in length, of cast iron, having a ledge upon the inner side to keep the wheels or rollers upon the track, and be spiked down to stone blocks.

Mr. Outram won the day, and $4\frac{1}{4}$ miles of the tramroad still exist at the Ticknall end of the line. Jessop was naturally angry that the directors had taken the advice of another engineer and rejected that of their own engineers, and remarked, "It will bring about a break of system in Leicestershire"; and so it did, as we shall see later on.

By the same Act of Parliament under which the Ashby Canal was formed Sir Henry Harpur obtained power to make a private railway or stone road from Caulk to join the Ashby Company's system, as did also Mr. William Abney, of Measham, who made a line from his colliery at Heather to Shackerstone, and the same was done by Mr. William Fermor, who connected his mines at Normanton-on-the-Heath with the canal by means of a private plateway. The various works constructed by virtue of the Ashby Canal Act, either by the Company or by private persons, amounted to over 50 miles. They were opened at various times. The first part of the Outram-way was in use for traffic from Ticknall in 1799, and remains to the present time;

a portion of the canal was opened in 1802, and the whole of the undertaking was completed and in full working order on May 1st, 1805. It should here be mentioned that in all the early Acts Parliament gave powers to canal companies to make and maintain "navigable canals," and these became generally known as "navigations." The workmen employed to make the canals, and also the cuttings or embankments of lines in connection therewith, were known as "navigators," a word which now has become contracted into "navvy."

Mr. Outram having induced the directors to adopt his "plate-way," sent his own men to lay down the permanent way, that is, to place the stone blocks or supports in position and spike down the "plates." These men were known as "platelayers," a term still applied to those who maintain and lay permanent way; but it is certain that a very few of the present platelayers ever saw or even heard of a "plate," and would not know how to lay one.

On the single lines there were numerous passing places, or loops, known as "turn-outs," and to guide the flat wheels in the required direction there was at each end a pair of wrought-iron tongues provided with stems, which dropped into holes in the castings—these were termed the "pointers," a word which has become shortened into a pair of "points."

Mr. Outram always spoke of the "plate-way" as "my system," "my plates," and in January, 1796, he wrote to the Duke of Portland (who was thinking of laying down a railway) informing him that "the Ashby Canal Company had rejected the 'rail-way' and is laying down the 'Outram-way.'" By omitting the first two letters of the word Outram and combining the words, we in these days refer to the line at Ticknall as the Ashby tramway.

By a very similar process "Jessop's edge-rail-way" has been contracted by leaving out the two first words entirely and writing the two latter as one word, thus, "railway."

By an Act of July 16th, 1846, the Midland Company purchased the property of the Ashby Canal Company for the sum of £110,000. This purchase was of a protective character, and it attained its object at the time, which was to keep dangerous rival schemes away from the Leicestershire coalfields. The most threatening of these were the Leicester and Bedford and the Bill of the Atherstone, Ashby-de-la-Zouch and Burton-on-Trent Railway Company, which proposed to raise a capital of £750,000, and to make a railway from the Trent Valley at Atherstone, passing through Ashby, Market Bosworth, and Hinckley, and having branches running to the collieries at Moira and the whole of the mineral districts of Ticknall and Breedon.

The ancient Ashby and Cloud Hill Outram-way has to a considerable extent, by virtue of the Act of 1865, been changed or converted into the railway from Ashby to Worthington, leaving only the Ticknall branch now remaining in its original condition.

This branch, $4\frac{1}{4}$ miles in length, has the original old cast-iron Outram plates.

This remarkable line is used occasionally, and to ride in a wagon having four perfectly flat wheels (that is, without flanges), and be drawn



THE OUTRAM-WAY, NEAR TICKNALL
(Opened 1799, used occasionally 1901).

by a horse over cast-iron flanged "plates" in the year 1901 is an experience which those persons interested in railway history and development should not miss. The ancient toll-house and weighing machine at the Ticknall Wharf remains, and is one of the very oldest buildings or stations upon the Midland system.

At the time of the railway mania, 1843-5, several rival schemes proposed to "join," "purchase," "work," or "have running powers over" the Leicester and Swannington Railway, and the correspondence shows that the "Leicester and Bedford," "Leicester and Tamworth," "Leicester, Tamworth, Coventry, Birmingham, and Trent Valley Junction,"

"Direct Birmingham, Leicester, and Boston," and the "Direct London and Manchester" (competing companies) were at this period all making offers and attempting to obtain the Swannington line. The Midland Company desiring to avoid competition in the Leicestershire district, purchased the Leicester and Swannington Railway, a dividend of 8 per cent. being guaranteed upon its share capital of £140,000, all of which was fully paid up.

The Swannington shareholders, at a meeting held at Leicester on August 20th, 1845, unanimously agreed to sell the line to the Midland Company upon the terms above mentioned, which were no higher than had been offered by other companies, and on June 15th, 1846, a special meeting was held at the Bell Hotel, Leicester, when Mr. Isaac Hodgson moved, and Mr. Edward Shipley Ellis seconded, the motion that "the Bill now before Parliament be approved," and it was carried by 363 votes against 12.

The Act for the vesting of the railway was passed on July 27th, 1846, by which the Midland Company was required to create £140,000 of Leicester and Swannington stock, consisting of 2,800 shares of £50 each, to be divided amongst the former shareholders.

By this purchase 16½ miles of railway, eight locomotives, six carriages, and twelve goods vehicles were added to the Midland system, but at that time there was no means of getting to the line by rail.

However, on August 3rd, 1846, an Act was passed to enable the Midland Company to alter and improve some portions of the Swannington line, and to make branches from the main line of the Midland Railway at Leicester and from Coalville to Burton-on-Trent.

In the following year this Act was amended by another, passed July 2nd, 1847, under which powers the present Leicester and Burton line was constructed. The old railway was doubled between Desford Junction and Thornton, also between Bagworth and Mantle Lane, Coalville, and a new deviation line, two miles in length, was constructed in the parish of Thornton, to avoid the Bagworth self-acting incline of 1 in 29, and to obtain a line over which locomotives could run. Passengers travelling from Leicester to Burton will observe the track of the old line on the right-hand side soon after passing Merry Lees, running on the level close in front of the Stag and Castle Inn. The power of locomotive engines had now so much increased that Mr. Robert Stephenson (in conjunction with Mr. Charles Liddell) constructed a new Bagworth incline, having a ruling gradient of 1 in 66, which some seventeen years previously he had to avoid. An accident of a serious character in the year 1843 led to the disuse of the old

Bagworth incline for passenger traffic. What happened was that whilst a train consisting of goods wagons and a passenger carriage (which most fortunately was empty) was being lowered down the incline it slipped from the incline rope, and running down the severe gradient was utterly wrecked. This occurrence so alarmed the directors and manager that in order to avoid the possibility of a similar accident occurring to a train conveying passengers they resolved to close the incline for passenger traffic. Passengers, it is true, were booked as usual from one end of the line to the other, but travellers were compelled to leave the train at the foot of the incline and walk to the top in one direction and to walk down to the bottom of the incline from the other end. This, of course, led to great dissatisfaction, and almost destroyed passenger traffic from Bagworth to Long Lane.

Thus it came about that when the Midland took over the line they constructed the deviation line with better gradients, and abandoned the use of the incline entirely after it had been closed for passenger traffic for about five years. The altered and improved lines were opened for traffic in accordance with the following quaintly worded notice issued by the local manager :—

MIDLAND RAILWAY.

LEICESTER AND SWANNINGTON LINE.

The public is respectfully informed that a double line of rails being now laid down, and the line completed from Desford to Long Lane, on Monday next, the 27th inst., a Train with Passengers will leave Leicester and Long Lane at 8 a.m., 12, and 4.30 p.m., stopping at the intermediate places. On Saturday the last train from Leicester and Long Lane will leave at 5 p.m. instead of at 4.30 p.m.

By Order,

G. W. GILL, Manager.

Railway Office, West Bridge, March 23, 1848.

It was then found that the Swannington Company's engines were unable to convey the trains up the new Bagworth incline single-handed, and a "bank engine" had to be kept at Desford Station. To avoid this double engine running the Midland Company sent one of its powerful goods engines named the "Buffalo" to work the line, but as there was no railway communication the engine had to be conveyed from the Fox Street Wharf to the West Bridge Station, a distance of fully a mile, through the streets of Leicester.

The construction of the Knighton Junction and Desford line was considerably delayed by the heavy cutting at Shoulder of Mutton Hill

and the sinking of a pier of the "Twelve Bridges" Viaduct, which prevented the complete opening of the Leicester and Burton line until August 1st, 1849. Six miles of the old Swannington line near Leicester and $1\frac{1}{4}$ near Swannington still remain practically unaltered at the present day.

The £140,000 of Leicester and Swannington Stock was in 1875 converted into £280,000 4 per cent. Midland Guaranteed Preferential Stock, and the latter amount was on April 1st, 1898, converted into £448,000 $2\frac{1}{2}$ per cent. Guaranteed Preferential Stock.

On March 13th, 1893, the new station at West Bridge, Leicester, was opened and the old station of 1832 was closed. The Chairman's chair and the bell from the top of the station are now carefully preserved at Derby as relics of this early line.



"No. 42" OPENED THE LEICESTER AND BURTON LINE, 1849

CHAPTER XII.

COMMUNICATION BETWEEN BRISTOL AND BIRMINGHAM

WE must now devote considerable attention to the communication, or rather absence of communication, between the north, the Midland system, and Bristol. To fully understand the situation we must remember that when the Great Western Railway was opened throughout on June 30th, 1841, if a passenger required to go from Bristol to Birmingham he must first travel from Bristol to Paddington, then drive to Euston and go down by the London and Birmingham Railway; in fact, journey over two sides of a triangle. Some time afterwards it was possible to avoid the drive in London by travelling over a very short line which bore the high-sounding title of "The Birmingham, Bristol, and Thames Junction Railway," but as the London and Birmingham and Great Western were of different gauges there could be no real "junction"—simply a transfer of traffic from one train to another upon the line which to-day we know as the West London.

As early as the year 1824 it was proposed to make a direct narrow-gauge line from Bristol to Birmingham, but the scheme fell to the ground.

An ancient tramway constructed by the Gloucester and Cheltenham Railway Company had for many years conveyed traffic from the former town to the docks at Gloucester, and it became evident to the inhabitants of Birmingham that if they could form a company to make a line from Birmingham to Cheltenham, the trade of Birmingham would be vastly increased by means of the Gloucester Docks.

The Birmingham and Gloucester Railway Company was formed principally by local gentlemen; Mr. Charles Sturge, Daniel Ledsam, Samuel Bowley, William Lewis, and other well-known business men being the prime movers. The scheme was to erect a passenger and goods station at Camp Hill, Birmingham, and to construct a railway passing down the great Lickey incline to Bromsgrove and thence to

Cheltenham, the proposal being to purchase and use parts of the old tramway system to the Gloucester Docks.

Probably this line would not have received more than local support, and would have possessed no special interest had it not been that at this particular period the "Battle of the Gauges" was commencing to be waged. This fact undoubtedly caused the Birmingham and Gloucester Railway Company to be powerfully backed by the Birmingham and Derby Junction, the Grand Junction, and the London and Birmingham Companies, not only "with a view to keeping the Great Western and its 7-feet gauge down in the west," but also to enable them to forward their own traffic by means of this railway to the Gloucester and Berkeley Canal Docks and the west of England.

The London and Birmingham and Grand Junction Companies had arranged to have their stations side by side at Curzon Street, and it was intended immediately the Birmingham and Derby Company's line was opened to Hampton that its trains should be run forward to Curzon Street, Birmingham. It therefore followed that for the purposes of through traffic the intended Birmingham and Gloucester Railway must join the London and Birmingham system near the Garrison, and have the power to run its own trains into the Curzon Street Station, or into any other station in Birmingham which might become the termination of the London and Birmingham Railway and the point of exchange.

Various routes between Birmingham and Gloucester had been surveyed, but Captain Moorsom, the Engineer, decided to carry the railway from its commencement at the "Gloucester Junction," Birmingham, past the Camp Hill Station, Moseley, Bromsgrove, Dunhamstead, Spetchley (for Worcester), Ashchurch, Cheltenham, to Spa Road, Gloucester, and terminating at the Gloucester and Berkeley Canal Company's basin and docks at Gloucester.

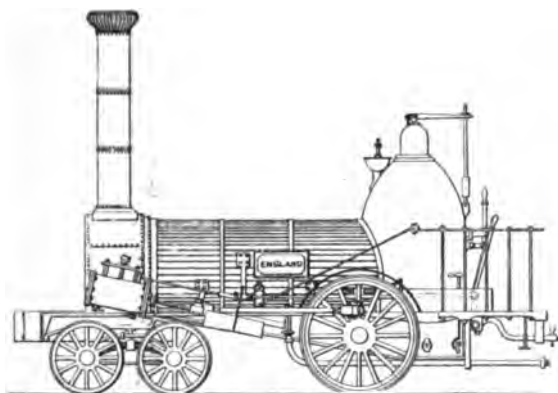
The Act for the formation of the Birmingham and Gloucester Railway Company was passed on April 22nd, 1836, and it contained the important clause giving the Company running powers from the "Gloucester Junction" into "the present or any future termination at or near Birmingham of the said London and Birmingham Railway." This clause ultimately became of the greatest value and importance.

The route selected by the engineer necessitated that he should construct the Lickey incline between Blackwell and Bromsgrove, fully two miles in length, upon a gradient of 1 in 37. The engineers of that day considered that such a gradient upon any main line was a great mistake. Captain Moorsom replied that "in America he had seen engines go up worse gradients than that, and if English engines could

not do it he would bring over engines from Philadelphia that could."

He therefore induced the directors to order eight locomotives from Norris and Co., of Philadelphia, the first four to arrive being named "England," "Philadelphia," "Columbia," and "Atlantic." These engines had a four-wheeled leading bogie, a single pair of driving wheels placed in front of the fire-box, and outside inclined cylinders. The diameter of the cylinders was $10\frac{1}{2}$ inches, the length of stroke 18 inches, the diameter of the driving wheels 4 feet, and the weight in working order 9 tons $11\frac{1}{4}$ cwt.

Their usual performance up the Lickey incline was the conveyance of a load of 33 tons at a speed of 12 to 15 miles per hour, or a load



AMERICAN ENGINE, 1840
(Birmingham and Gloucester Railway).

of $39\frac{1}{2}$ tons at $10\frac{1}{2}$ miles per hour, or a maximum load of $53\frac{1}{2}$ tons at $8\frac{1}{2}$ miles per hour. The lightest load and the highest speed were for passenger trains, the medium load for goods trains, and the heaviest load for mineral traffic.

The American engines having worked with great success upon the Lickey incline for a few weeks, Mr. Edward Bury, of Wolverton, wrote to the directors "to declare that whatever American engines could do his could do," and sent the London and Birmingham Company's engine named "Bury" to prove his assertion.

Mr. Bury, himself driving, started from Bromsgrove and humorously called to Mr. Gwynn, who had come from Philadelphia with the American engines, to join him. "No," he replied, "it's no use; you'll soon come back again"; and back again Mr. Bury and his engine came, having stuck before getting half-way up the incline.

The first portion of this railway from Cheltenham to Bromsgrove was opened on June 24th, 1840. A correspondent of the *Cheltenham Chronicle* thus describes a trip on that day:—

“At 10 minutes past 9 a.m., the passengers having taken their seats, the signal for starting was given. A bugler played “God save the Queen”; the train moved gently on till the tune was concluded and then started off in gallant style, quickly receding from the astonished gaze of the persons assembled. The engine, which was a very excellent one, soon showed its capabilities, and though an alteration from one line to another and a consequent slackening of the velocity was necessary, long before we arrived at Swindon it was in full speed [there is a village called Swindon near Cheltenham]. The pace was excellent, being at least 30 miles an hour. They took in water at Spetchley at 10.12. This was one of the finest stations on the line, from which coaches ran to Worcester. The train reached Bromsgrove at 10.50; it returned 5 minutes later with an engine of Philadelphian manufacture, and got back to Lansdown, Cheltenham, at 12.27.”

At first only two trains in each direction ran daily between Cheltenham and Bromsgrove, and there was no communication on Sundays. The intermediate piece of line, namely, from Bromsgrove to Birmingham, not being completed, passengers were conveyed to and from these places by road coaches, which were provided for a limited number of through passengers.

The line was further extended from Bromsgrove to Cofton Farm, about eight miles from Birmingham, which further reduced the coaching, this latter portion being opened on September 17th.

Three months later the line was opened (December 17th) from Camp Hill Station, Birmingham, through to Gloucester. The “trains stopping at first-class stations” performed the total distance in two hours and a half.

The extension from Camp Hill to the junction of the London and Birmingham Railway was not completed and opened until August 17th, 1841, at which time the passenger trains of the Birmingham and Gloucester Company entered the Curzon Street Station in accordance with the running powers granted by the Act, but the goods traffic was dealt with at the Camp Hill goods depôt and at the “Exchange” sidings.

A further order for eight more American engines was given. Shortly afterwards, in consequence of the taunts which appeared in an American newspaper, that “the English could make inclines but had to come to America for engines to work them,” Mr. J. E. McConnell (the Company's Locomotive Superintendent) obtained the authority of the directors to build at their Bromsgrove works a very powerful

tank engine, which, when completed in 1845, proved that what an American engine could do an English-built engine could also accomplish.

As the railway between Cheltenham and Gloucester was intended to be used by both the Cheltenham and Great Western Union and the Birmingham and Gloucester Companies, according to modern practice this section would have been vested in and managed jointly by a committee of the two companies. However, another course was followed. The two Acts which both companies obtained in the year 1836 provided that the Cheltenham and Great Western Union was to own the northern half of the line between Cheltenham, Lansdown Junction, and Churchdown, and to appoint the Birmingham and Gloucester Company trustees of this northern half of the line. The Birmingham and Gloucester Company, on the other hand, whilst owning the southern half between Churchdown and Gloucester, appointed the Cheltenham and Great Western Union Company their trustees for this part of the line; so that while each company owned one half of the line they modified their ownership by appointing the other company trustees, thus making it impossible for either company to "block the other out."

The arrangement is an unusual one, but undoubtedly it must have given satisfaction, as it still remains in force between the Great Western and Midland Companies to the present day, the trains of both companies using the line between Cheltenham and Gloucester without paying rent or toll.

The portion of line between Cheltenham and Gloucester being for the joint use of two companies using different gauges, was laid with the mixed gauge so as to be available for the trains of both companies. This was accomplished by laying three rails for each track, one extra rail being added to the narrow gauge for the broad-gauge traffic. This was the first and only instance up to this period of the use of mixed gauges. When the broad gauge was abolished the extra or third rail was removed.

In 1837 the Birmingham and Gloucester Company obtained an Act to extend its railway by a branch from Ashchurch to Tewkesbury, which was subsequently constructed, and in 1845 further powers to make "extension lines" at Gloucester, a branch at Stoke Prior, and an extension line from St. Andrew's Junction, near Camp Hill, Birmingham, to join the Midland line at Saltley. The object of the last-named branch was to avoid the inconvenience of the lift at Lawley Street Station, which lift for the transfer of traffic was thus replaced by a branch line known as the Aston curve.

The Bristol and Gloucestershire Railway Company obtained power

under an Act of 1828 to make a railway or tramroad from Bristol to Coal-pit Heath, in the parish of Westerleigh, in the county of Gloucester.

The very name, Coal-pit Heath, suggests the object of the line, which was to convey coal from the collieries near Westerleigh to the city of Bristol, and, like the railways of the north, it had a gauge of 5 feet to the outside edge of the rails.

The Great Western Railway Company was determined to extend its broad gauge to the north, and had no intention of remaining in the west. For this purpose it favoured the formation of the Cheltenham and Great Western Union Company to commence by a junction at Swindon, running thence to Standish and Gloucester; and by purchasing half the Cheltenham and Gloucester tramway, which it will be remembered the Birmingham and Gloucester Company required, continued the broad gauge to an independent station at Cheltenham.

The Great Western Company also obtained a controlling interest in the Bristol and Gloucestershire Company, already mentioned; and under an Act passed on July 1st, 1839, the name was changed to "The Bristol and Gloucester Railway," the gauge was changed from narrow to seven feet, and an extension was constructed from Westerleigh Junction to Standish Junction, about seven miles south of Gloucester, from whence its trains had running powers over the Cheltenham and Great Western Union to Gloucester. At Bristol a line was made to connect the old Coal-pit Heath line at Lawrence Hill with the Great Western at Temple Mead, and that Company obtained powers to run from Bristol to Standish. Thus it will be observed the broad gauge was firmly planted at Gloucester by means of two lines—one from Swindon, the other from Bristol.

The Bristol and Gloucester Railway was formally opened throughout on July 6th, 1844, by the directors, who were accompanied by those of the Birmingham and Gloucester and Bristol and Exeter Railways.

The train was to have left Bristol at 10 a.m., but did not start till twelve o'clock noon. When within half a mile of Gloucester the engine got off the line, on the outside of a sharp curve, owing to one of the strap-bolts of a transom being insufficiently secured and permitting the gauge to widen. No alarm, however, was excited, as the engine was going slowly at the time, followed by another engine, which was not at work. The passengers got out and walked to the carriage-shed of the Birmingham and Gloucester Company, which had been neatly and commodiously fitted up with tables, evergreens, flags,

orchestra, etc., for the accommodation of the company. The carriages were twelve in number, and contained nearly five hundred and fifty ladies and gentlemen, most of whom partook of the entertainment. The health of Brunel, the great broad-gauge engineer, was drunk ; but he was not present, being busy getting the derailed train on the metals again. The party returned to Bristol about 8 p.m.

Public traffic commenced on Monday, July 8th, when arrangements were made for six trains in each direction daily, and half the stage coaches immediately ceased running.

Some years before this line was opened the public and the traders



BRISTOL QUAY.

saw that the break of gauge at Gloucester would be a very serious evil, and that there would be delays to passengers by having to change trains, and that goods, coal, timber, etc., would all have to be transferred to other wagons. These fears were at once realised when the two systems were brought into contact at Gloucester, and at length the delays became so serious and the question of gauge so pressing that the Government, regarding it as a question of national importance, appointed a Royal Commission to inquire into the subject on July 11th, 1845. After hearing a great deal of evidence, beginning with Robert Stephenson on August 6th, 1845, the Commission eventually, in 1846, reported in favour of the narrow, or 4 feet 8½-inch gauge, and against the broad, or 7-feet gauge. This was the death-blow to the broad gauge, which has now entirely disappeared from this country.

A considerable number of Bristol and Gloucester shares had changed hands, and it soon became evident that the Great Western no longer held "the controlling interest," and many of the new shareholders expressed regret that their line was not narrow gauge. They also formed the opinion that the Birmingham and Gloucester and the Bristol and Gloucester Companies should amalgamate. Negotiations proceeded so far that the two companies decided to unite under the name of the Bristol and Birmingham Railway Company, and a Bill was prepared and read in Parliament a second time to carry that into effect; and from March, 1845, pending the passing of the measure, they were "working together as an amalgamated company." The management was controlled by a joint board or committee of directors, and it was decided that a change should be made in the gauge of one railway so that through trains could be run between Bristol and Birmingham without break of gauge. This was a question of vital importance, as either the Great Western and the broad gauge must be brought into the Midland district to Birmingham, or the narrow gauge must be carried into the Great Western country to Bristol.

Between these two great rival interests the Bristol and Birmingham Companies found themselves the centre of attraction.

First came a suggestion from one company and then from the other. The Bristol and Birmingham Board opened negotiations with both, and the rivalry continued. Mr. Saunders, on behalf of the Great Western, made his final offer, which was to give the shareholders ordinary Great Western shares, which would, according to the dividends then being paid by the Great Western, bring in 6 per cent.

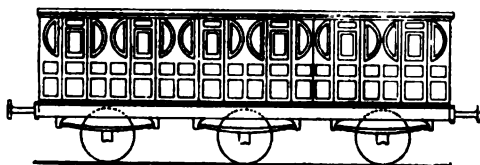
Immediately afterwards Mr. John Ellis had an interview to place before the joint board of directors his final offer on behalf of the Midland. It "went one better," and was to consolidate the Bristol and Gloucester and Birmingham and Gloucester Companies with the Midland, the shareholders of the two previously mentioned companies to receive a guaranteed 6 per cent. upon their capital, by the creation of Midland Railway 6 per cent. shares in lieu of their own shares.

This offer of a fixed return instead of an uncertain one was accepted, and Mr. John Ellis carried off the prize, which extended the Midland system to Bristol.

This arrangement received parliamentary sanction by an Act passed on August 3rd, 1846, vesting the properties of the Bristol and Gloucester and Birmingham and Gloucester Railway Companies in the Midland Company. The Midland was required to raise a capital of £1,799,902 15s. by the issue of 6 per cent. preference shares, which were to be

given to the Bristol and Gloucester and Birmingham and Gloucester shareholders in lieu of their shares in those companies which were by the Act dissolved.

The Birmingham and Gloucester purchase gave to the Midland Company the right of running powers into the Curzon Street Station, Birmingham, which was the property of the newly formed London and North Western Railway Company. It also added about 54 miles to the Midland system, of which $33\frac{1}{2}$ miles were laid upon longitudinal timbers, $3\frac{1}{2}$ miles on iron sleepers, and the remainder upon the ordinary cross sleepers. The locomotives were thirty-seven in number, the most powerful of which was Mr. McConnell's celebrated tank engine for the Lickey incline, having six coupled wheels of 3 feet 10 inches diameter, cylinders 18 inches diameter, a stroke of 26 inches, and a weight of 30 tons. By the Bristol and Gloucester purchase the Midland became possessed of 30 miles of broad 7-foot gauge railway laid on longitudinal timbers, commencing at the junction with the



MIDLAND BROAD-GAUGE THIRD-CLASS CARRIAGE, 1848.

Great Western at Bristol and terminating at Standish Junction, near Stonehouse. It also conferred powers to run into the Temple Mead Station at Bristol and also to run over the Cheltenham and Great Western Union from Standish to Gloucester.

The total stock, consisting of eleven broad-gauge engines, twenty carriages, and eighty-two other vehicles, also became the property of the Midland.

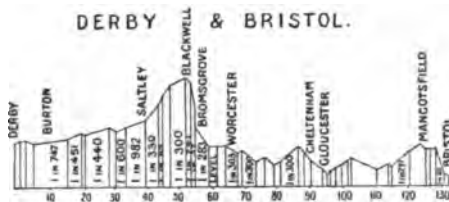
It would have been far more convenient to the public if the gauge could have been at once changed to "narrow," but this was impossible, as the working of the locomotive department had previously been let by contract to Messrs. Stothard and Slaughter, of Bristol, for a term of years. The Act of August 3rd, 1846, further required the Midland Company "at all times hereafter to maintain" on the line from Bristol to Standish Junction "two lines of railway on the same gauge as the Great Western Railway," and to permit the Great Western broad-gauge trains to pass "at all reasonable and proper times"; and further, the Cheltenham and Great Western from Standish to Gloucester was

broad gauge only. In 1848 the Midland obtained power to make a new narrow-gauge railway from Gloucester to Standish, seven miles, and to lay down a third rail thence to Bristol, thus completing the narrow gauge to Temple Mead Station, Bristol, the narrow gauge being opened May 29th, 1854. Six years before the alteration was completed it became necessary to have four new broad-gauge engines, and Messrs. Sharp Brothers, of Manchester, were instructed by Mr. Matthew Kirtley to build four engines, Nos. 66, 67, 68, 69, "convertible"; they were, in fact, narrow-gauge locomotives, having very long axles, and the wheels were placed quite outside the axle-boxes. The cylinders were 16×20 , driving-wheels 6 feet 6 inches. These engines commenced to work on the broad gauge 1848-9, but as soon as the narrow gauge was completed the wheels and axles were taken out, sent to Derby to be shortened, and replaced with the wheels between the double frames in the ordinary way. These were the first "convertible" engines ever built, and the change to narrow gauge was accomplished with very little trouble or expense.

The London and Birmingham and Grand Junction Companies, which on July 16th, 1846, had become the London and North Western, now decided to construct a large central station at New Street, Birmingham, and to close their Curzon Street Station for passenger traffic. The Midland, who had absorbed the Birmingham and Gloucester Company, took advantage of that Company's rights as set forth in Clause 21 of the original Act granted to the Birmingham and Gloucester Company on April 22nd, 1836, whereby the Birmingham and Gloucester Company had power to run into the Curzon Street Station, "or any future termination at or near Birmingham" of the London and Birmingham Railway. New Street being such a "new termination," the Midland had the right to exercise running powers; and in consideration of the service rendered by the Midland in obtaining the Birmingham and Bristol and keeping the Great Western "down in the west," it was now arranged by the London and North Western (as successors of the London and Birmingham) for the Midland to use the New Street Station, Birmingham, upon paying for porters and an acknowledgment of £100 a year. In order to more completely carry out the arrangement, the Midland, on July 27th, 1846, obtained an Act to make the "extension curve" a mile in length to connect Saltley on the old Birmingham and Derby Company's system with the London and North Western Railway at "Derby Junction," near New Street. Another connecting link about a mile in length was constructed from Saltley to St. Andrew's Junction, thus making a direct communication with the Birmingham and Bristol

lines. These various links and the mixed gauge enabled through trains to be run from Leeds to Bristol.

Generally speaking, it will be found that the various main lines in this country either start from London or are in connection with other railways which do. The Midland Company's west main line from Derby to Birmingham and Bristol is quite an exception to this rule, as it forms the great through route between the north and north-east of England and Bristol and all parts of the west, the formation of which has been of great advantage both to the public and the Company.



CONTOUR OF LINE FROM DERBY TO BRISTOL *via* CAMP HILL AND WORCESTER.

CHAPTER XIII.

THE LEEDS AND BRADFORD RAILWAY

BRADFORD, the important seat of the woollen industry and the greatest wool centre in the world, had up to the year 1846 remained completely isolated and unconnected with the dominant factor in modern commerce. It had no railway communication of any kind whatever, its industries were crippled, and its trade, if not its existence as a great commercial centre, was seriously threatened.

Originally, when George Stephenson surveyed the North Midland line from Derby to Leeds, the people of Bradford saw the necessity of having a line from Leeds forward to Bradford, and the leading traders pressed that view on the directors of the North Midland Company; but the Company considered that their seventy miles of line from Derby to Leeds was quite sufficient for them to undertake at that time (1836). George Stephenson, who was engineer to the North Midland, advised the representatives of the Bradford trade that although his Derby to Leeds line could not be extended forward, they ought to form a company of their own to continue the through communication; and he further stated that he was willing to be engineer to such a scheme as he had suggested. But the Bradford people then failed to find a body of men with sufficient courage or foresight to grasp the situation and undertake the financial responsibilities. The result was that Leeds obtained through communication to London long before its rival in the West Riding, and Bradford was left without the coveted line till a later period.

At the time of the amalgamation in 1844 the people of Bradford saw another opportunity of pressing their claims, and they urged the directors of the newly formed Midland to make the extension from Leeds to Bradford. The Midland, however, considered that it had "quite sufficient irons in the fire," with the Nottingham and Lincoln and Syston and Peterborough extensions, and could not then entertain the suggestion made by the leading citizens of Bradford.

Mr. Murgatroyd, Mr. John Rand, and others interested in the trade of Bradford saw that they were placed at a serious disadvantage, and determined to form a company of their own. They therefore secured the services of Mr. George Hudson, M.P., as Chairman, and Mr. George Stephenson as Engineer; and the Leeds and Bradford Company's Act received the Royal Assent on July 4th, 1844. The railway was to commence at the Wellington Station, Leeds, thence running past Holbeck and Shipley to Bradford, and there was also a short connecting line outside Leeds to join the Midland Railway with the Leeds and Bradford, thus enabling Midland trains to run into the Wellington Station, Leeds.

It was a sound stroke of policy to thus carry out the original suggestion of George Stephenson, and with Hudson, the Midland Chairman, at the head of the movement, and Stephenson, the Midland Engineer, to carry out the line, it gave it a very close association from the first with the Midland Company. The Midland Company also secured a great advantage, in that whereas the Midland trains had previously to stop at Hunslet Lane Station, which was on the outskirts of Leeds, in an unsuitable district, the Wellington Station, which was constructed by the newly formed Bradford Company, provided the Midland with a splendid terminus in the centre of Leeds, to which the Midland trains began to run on July 1st, 1846. The line was duly constructed, and opened with more than usual ceremony—as was certainly due—as marking the connection of two great commercial centres.

There was a "contractors' opening" of this line on May 30th, 1846. The contractors, having completed their works within the time allowed, invited the directors of the Company and a party of friends to accompany them on a trip to Bradford and back. The train left Leeds shortly before one o'clock, and was composed of about a dozen open-topped third-class coaches, except one vehicle reserved for ladies. Two local bands attended and played in the train, as well as at Leeds Station and at the White Horse Inn, Boar Lane, on getting back. The engine (the "Linsay") was decorated with flowers, and on it were two flags, one inscribed, "Who'd have thought it?" and the other, "See the conquering hero comes!" The train was under the guidance of Mr. Fell-Young, resident engineer of the line. Surprise was expressed at the Bradford people not cheering the train, which was attributed to the severe distress in the town damping their spirits. An engine called "Stephenson" brought the train back, stopping a quarter of an hour to enable the passengers to inspect Apperley Viaduct. At Kirkstall Forge seven small cannon were fired on each passing of the

train. The dripping of water from the roof of Thackley Tunnel was most unpleasant in the open carriages. A shorter train, conveying the workmen, was also run, drawn by the engine "Malton." Mr. George Goodman, of Leeds, a director, presided at the dinner at the "White Horse," Leeds, soon after 6 p.m. The contractors were Messrs. Crawshaw, Leeds to Kirkstall; Messrs. Tredwell, Kirkstall to Thackley Tunnel; Messrs. Nowell and Hattersley, the tunnel itself; and Mr. James Bray, from the tunnel to Bradford.

The formal opening took place on June 30th, a general holiday being held at Bradford, but the weather was unfavourable. A train of about fifteen coaches from the Midland, York and North Midland, and other lines left Leeds at 1.14 p.m., and another soon after, containing Mr. George Hudson, the Board of the Leeds and Bradford Company, the Lord Mayor of York, and the Mayor of Leeds. There was a collation in a tastefully decorated pavilion facing Bradford Station. In the afternoon there was a great dinner in the Music Hall at Leeds, Mr. Hudson presiding, and sitting under a sort of canopy, "the observed of all observers."

Public traffic began next day, Wednesday, July 1st, trains running at various intervals from 5 a.m. till 10 p.m. There were no intermediate stations finished or in use.

On June 30th, 1845, the Leeds and Bradford Company obtained an Act to make an extension from Shipley to Skipton, thence turning in a southward direction to form a junction at Colne with the East Lancashire Railway Company's system, which was intended to have direct communication with Liverpool and also with Manchester.

At this period another independent company was in progress, named the "North Western," which obtained an Act to form a junction with the Leeds and Bradford extension at Skipton, its object being to run past Clapham, Settle, and Lancaster to Morecambe Bay; also by another line to form a junction with the Lancaster and Carlisle Company's system. The importance to the Midland Company of the Leeds and Bradford, its extension to Skipton and the North Western, thence to the Lancaster and Carlisle line, can hardly be overestimated, as by those connections a direct communication was formed between the Midland system at Leeds and Carlisle and Scotland.

The Manchester and Leeds Railway Company, which at first had handed over its traffic to the North Midland at Normanton and possessed running powers over that line into Leeds, had now become on very friendly terms with the London and York. It was forming a junction at Askern, near Doncaster, and consequently giving the Great Northern access to the Midland district at Leeds. The

Manchester and Leeds Company, no doubt backed up by the London and York, desired to obtain possession of the Leeds and Bradford Railway, and was prepared to lease it at a rental of 10 per cent. In fact, a Bill to amalgamate the Manchester and Leeds and the Leeds and Bradford was read a second time in Parliament in 1846. The East Lancashire Railway Company was equally anxious to secure the Leeds and Bradford Company, as *via* Colne it would connect the towns of Manchester, Liverpool, Leeds, and Bradford, and it was also prepared to offer 10 per cent.

Mr. Hudson's personal feeling was thought to be that the Leeds and Bradford Railway should fall into the hands of the Midland; but as Chairman of the Leeds and Bradford Railway, and in justice to his shareholders, he could not of course expect them to accept less than the 10 per cent. which the East Lancashire and Manchester and Leeds Companies had offered and were willing to give; and he contended that if the line was worth that amount to the two companies mentioned, surely it was worth as much to the Midland.

The Midland Board considered the question, and came to the only possible conclusion, namely, that the line must be theirs; and a special meeting of the Midland shareholders was held in July, 1846, to consider the proposal to lease the Leeds and Bradford line for 999 years at a rental of 10 per cent.

As Mr. George Hudson was so much interested in the Leeds and Bradford Railway, it was naturally expected that he would either absent himself from the meeting, or at least if he did attend that he would not speak on the subject.

Unfortunately, by some error of judgment and to the surprise both of his friends and his enemies, he not only took the chair at the Midland meeting, but at once rose to propose that the lease should be entered into. Almost immediately it was seen that there was about to be a storm. Voices remarked, "You are buyer and seller too!" "You are looking after your own interests!" "You have no business in the chair when we discuss this!"

In spite of these "very straight hints," Mr. Hudson continued to speak, and gave "a broad denial to the assertion that he had taken advantage of his position for his own benefit." He "publicly declared that he had never done so," and called upon any person who could prove anything to the contrary to come forward and do it at once. This challenge was received with applause, and the shareholders anxiously looked round the room to see "who would rise to the occasion," but all was perfectly quiet; the expected storm passed over, and the difficulty appeared to be ended. Mr. Hudson, however, con-

tinued to defend himself, and after going over a list of railways which the Midland had obtained, declared that "he never made a single penny by any of these purchases," and was concluding the speech with the remark, "Well, gentlemen, having cleared myself from that imputation," when a voice remarked, "No, you have not."

This was certainly very unfair and uncourteous treatment, considering that a challenge had been thrown down by the Chairman which no one had attempted to take up. Mr. Hudson then, it would appear, lost his temper, and the whole tone of the meeting became "very excited." A shareholder exclaimed, "If you are the Railway King you are not going to come here and sit upon us," an interruption which certainly did not improve the tone of the debate, and caused the Chairman to remark, "All this has been concocted in Liverpool," a true but very unwise statement.

With a view to put an end to the uproar and to bring the meeting back to business, Mr. John Ellis pointed out that "it was essential to the prosperity of the Midland that they should complete this purchase. The line was necessary for their protection, and if it fell into the hands of a company now in existence, namely, the London and York, where would the Midland be then? Away would go half their traffic from London to Glasgow and the north." Without question the view of Mr. Ellis was the correct one, and the meeting was almost entirely with him.

Mr. Brancker, of Liverpool (who had been a North Midland director before the amalgamation), moved an amendment that the meeting should be adjourned for two months, to which Mr. John Rand replied that the Leeds and Bradford Company, of which he was a director, would not wait for two months, but would proceed to accept one of the other two offers. Mr. Hudson stated that if there were a considerable minority who voted against the lease he should at once withdraw the proposition.

Finally, the amendment having been lost, the resolution was put to the vote, when only six hands were held up against it. The terms were that the Midland guaranteed 5 per cent. on the full amount of the shares, as if paid up, until three months after the opening of the line complete to Colne—or about the beginning of 1848—after which £90,000 per annum was to be paid, or 10 per cent. in perpetuity on £900,000 (the share capital of the Leeds and Bradford), which was divided into 18,000 shares of £50 each. The Midland Company were to furnish any additional capital which might be required to complete the line.



MIDLAND NEW HOTEL AND STATION, BRADFORD.

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Of Mr. Hudson's energy, business capacity, and hard work in connection with the building up and defence of the Midland Company there can be no question ; but, on the other hand, there cannot be a doubt that the events and incidents which occurred at this most unfortunate meeting (which he would have been well advised not to have attended) shook his reputation to the very foundation, and proved to be the turning point, the beginning of the end, of Mr. Hudson's great and remarkable railway career.

CHAPTER XIV.

GIGANTIC SCHEMES AND AN ANCIENT TRAMWAY

THE railway system of the kingdom had not only been progressing, but had rather been expanding by great leaps and bounds, and practically every centre of trade and industry, as well as fashionable places of resort, were loudly clamouring for the benefits of the new communication, and railway companies were besieged with petitions and requests for extension from all quarters. The expansion of the Midland had so far yielded very satisfactory results, the Company's traffic continued to increase, and several of the new branches were giving results even better than could have been expected. Railways continued to be by far the most important financial and commercial undertakings of the day, and in the beginning of 1847 the great boom had not yet expended itself, so that the Midland had still to further pursue a forward policy to meet rival schemes and to safeguard their own interests.

This being the position of affairs, further gigantic proposals were launched by the Midland, and at the meeting of the shareholders on March 6th, 1847, these proposals, which had been embodied in thirteen Bills, came before the shareholders. The capital involved was no less than £4,680,000, and they included the construction of 251 miles of new lines. These projects were as follows:—

1. The purchase of the Mansfield and Pinxton Company's Tramway; to alter the same, and to construct a branch from the Erewash Valley line to join the Nottingham and Mansfield branch at Sutton; also to construct branches to Mansfield, and also to the Alfreton Ironworks.
2. To construct an extension at Lincoln to connect with intended railways to Grimsby and New Holland.
3. The construction of a deviation on the Syston and Peterborough line, and an approach at Manton.
4. To enlarge the joint station at Normanton, and to enlarge Masborough Station.

5. To construct a new line from Leicester to Desford, and to double the old Leicester and Swannington line from Desford to Coalville; also to enlarge the West Bridge Station at Leicester.

All the above proposals were sanctioned by Parliament and carried into effect.

6. To construct lines from Wigston Junction, near Leicester, *via* Bedford, to Hitchin, with a branch from Kettering to Huntingdon, and another branch to Northampton; also an enlargement of the Leicester Station (Campbell Street).

Received the Royal Assent July 9th, 1847, but afterwards abandoned.

7. To construct a narrow-gauge railway from Gloucester to Standish Junction.

8. The extension of the narrow gauge to Bristol.

These two revived schemes were again postponed, pursuant to a resolution of the House of Lords on June 10th, 1847.

9. To construct a narrow-gauge railway from Mangotsfield Junction to Bath.

This proposal was withdrawn after passing its second reading in the House of Commons.

10. To construct lines from Sheffield to Barnsley, Doncaster, and Goole.

This was withdrawn after an arrangement had been made to give the Midland running powers into Doncaster over the South Yorkshire Company's line from Swinton Junction.

11. To construct lines from Worcester to Hereford, Malvern, and Cheltenham.

12. To construct a line similar to the above, but having an additional branch to Ledbury.

Both of the above Bills were withdrawn after the Midland had secured running powers from Stoke Works Junction to Worcester and Hereford over the Great Western Company's system.

13. To construct a line from Hampton to Cheltenham, with branches to Warwick and Leamington.

This was withdrawn after the Midland had arranged to exchange traffic with the London and North Western Company at Birmingham.

All these proposals were approved by the shareholders. But between the sanctioning of these schemes and the carrying of them into practical effect there had appeared on the horizon a little cloud, which warned prudent men of the probable break in the flow of undreamt of prosperity. Cautious men now began to question whether the country could stand the strain of such unparalleled expansion in the means of

communication, and to ask whether there had not been an over-rapid construction of railways in advance of the requirements and the development of the trade of the country.

A spirit of prudence and caution began to creep in, and rival companies became more open to compromise by granting running powers; and by this and other means they obviated the construction of many lines which had already been sanctioned by Parliament, but of whose remunerative qualities there was some doubt.

This spirit is evidenced in the fate of these and other Bills. Three Acts which the Midland Company had obtained in 1846, namely, to make lines from Clay Cross to Newark, from Ashby to Nuneaton, and a branch from Halesowen were allowed to lapse; and of the thirteen Bills introduced into Parliament in 1847 only five were carried into effect.

One of the most noteworthy of these was the purchase of the Mansfield and Pinxton Tramway for £21,066 13s. 4d.—a comparatively small sum, but giving possession of a very ancient line.

When, as long ago as 1777, the Erewash Valley Canal Company commenced its water-way from the Trent to Langley Mill, it was intended to extend the canal from Pinxton Wharf on to Mansfield. But here history repeated itself, and the same difficulties were experienced as in the case of the Ashby Canal, namely, the expense of locks, owing to the contour of the land, and the shortness of water during times of drought, and on these practical difficulties being pointed out it was found to be inadvisable to construct the extension from Pinxton to Mansfield. But instead of a canal it was determined to secure communication by means of a tramroad or railway. Then came a similar dispute to that which occurred at Ashby: whether the line should be constructed as an "Edge-rail-way," or as an "Outram-road." The "Outram-road" carried the day, and it was constructed under the Mansfield and Pinxton Act, passed June 16th, 1817.

The line was made and opened in 1819, and worked by horse-traction for very many years. This communication was regarded as of very little importance, except for its local utility and as a feeder to the Erewash Valley Canal.

But when the railway mania burst upon the country in 1845 it suddenly acquired an unexpected value, as likely to be a great feeder to a railway in opposition to the interests of the canal, and it arose in this way.

Two so-called independent schemes, which were ultimately amalgamated, were presented to Parliament, namely (1) for the construction of a Boston, Newark, and Sheffield Railway (this was to commence

at Boston, passing the banks of the Trent at Newark, through the towns of Southwell and Mansfield, terminating at Chesterfield in conjunction with the existing and projected Midland railways, the capital being £1,000,000; and (2) the Nottingham and Mansfield Railway for the construction of a line to commence in junction with the Midland railways at Nottingham, passing through Lenton, Radford, Basford, and by using a portion of the old Pinxton and Mansfield Tramway to Mansfield, terminating in junction with the proposed Boston, Newark, and Sheffield scheme at Teversall, with a further extension to Clay Cross, the capital being £500,000.

An examination of these schemes showed that their real object was to enable the London and York Company to extend itself to Sheffield, Chesterfield, Nottingham, and the whole of the Midland and Erewash Valley coal districts—the richest district covered by the Midland, to whose interests it was undoubtedly hostile. This would have been an invasion into the very heart and soul of the Midland system, which, as a matter of self-preservation, at once excited great interest on the part of the Midland.

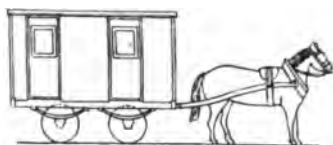
So anxious were the promoters of this scheme to obtain the ancient Mansfield and Pinxton Tramway, so as to give them primary possession of the communication across to Pinxton Wharf, that they did not even wait for their Act to be passed by Parliament, but entered into arrangements to obtain, and did obtain, the control by ownership of this old artery of traffic, a portion of which was to be used and converted into their Nottingham and Mansfield scheme.

To meet this difficulty and to resist this threatened invasion by the "other parties," Mr. Hudson and the Midland Board drew up a rival scheme to cover practically the same unoccupied ground by extending its arteries into these unoccupied districts and thus attract traffic to the Midland instead of having some of it diverted to the London and York (now Great Northern) system.

A Bill was introduced into Parliament for the Nottingham and Mansfield Railway by the Midland, and also for the Chesterfield and Newark line, as explained by Mr. Hudson to the shareholders at their meeting on May 2nd, 1846.

The result was that the threatened invasion was rejected by Parliament and the Midland proposals sanctioned.

But the owners of the invading scheme were in a quandary. They



PASSENGER CARRIAGE, 1848
(Mansfield and Pinxton Company).

were in the position of a provisional committee without any parliamentary authority, owning a tramway which was useless to them because they had no parliamentary authority either to own or use it. In fact, they could not deal with it in any way whatever, however anxious they might be to sell it for the benefit of their shareholders and to wind up their venture.

The Midland were anxious to purchase the property, and the other people were perfectly willing to sell, and at length relief from this curious position was obtained by the issue on February 15th, 1848, of a certificate by the Railway Commissioners, to the great delight of the interested parties, allowing the tramway to be amalgamated with the Midland Company's system. This certificate had to be granted by the Railway Commissioners before the Mansfield and Pinxton Company could be dissolved, in accordance with the Midland Act passed in July, 1847.

Thus the old Mansfield and Pinxton Tramway became the property of the Midland, and it had its gradients greatly improved and converted into a modern railway, and was reopened to Mansfield October 9th, 1849. During the progress of the alterations, on March 3rd, 1849, a jar containing 500 Roman coins and medals was unearthed near Hermitage Mills, close to the old line.

At the meeting on August 12th, 1847, a dividend of 7 per cent. was declared upon the ordinary shares, after the Bristol and Birmingham 6 per cent., Leicester and Swannington 8 per cent., and others had been duly paid. On February 12th, 1848, the gross receipts for the half-year amounted to £586,034, and the dividend was declared at 7 per cent., the Chairman remarking that all expenses that could fairly be charged to revenue account had been so charged, and that the renewals had been a heavy item. For instance, he would take the carrying stock. "It was," he said, "notorious at the time of the amalgamation that the rolling stocks of the three companies were in a state of excessive depreciation, that neither their wagons, carriages, engines, nor anything else were equal to the traffic of to-day. Without casting reflections upon either of the three companies, they would all agree that each party had been anxious to economise their expenditure, and that when the stock was handed over to the amalgamated company it was found to be in a condition very unlike what it was at present."

The Midland Company in 1848 were stated to have 160 engines and tenders, averaging 39 feet long, which equals 2,192 yards, and 6,816 other vehicles, averaging 18 feet over the buffers, the total being 23 miles and 416 yards long, or further than from Derby to Chesterfield.

The fact should here be recorded that Mr. George Stephenson, who, as we have seen, was a founder of the Midland, died at Tapton House, Chesterfield, on August 12th, 1848, in the sixty-seventh year of his age.

At this period several important understandings were come to with other railway companies; for instance, the South Staffordshire was to form a junction with the Midland at Wichnor; the North Staffordshire, it was arranged, should form junctions with the Midland at Burton-on-Trent and Willington, and have running powers over the Midland Railway and use its stations at Burton and Derby.

At Brighton, near Staveley, a junction was to be made to connect with the Manchester and Sheffield system, and in the west the Oxford, Worcester, and Wolverhampton Company was to be permitted to put in junctions at Stoke Prior and Abbotswood, thus giving the Midland Company direct communication with Worcester. The (little) North Western Company arranged to use the Leeds and Bradford Station at Skipton and to work the Midland traffic thence to Morecambe and Ingleton Junction, and the London and North Western Company agreed to give the Midland better facilities between Rugby and London and to avoid as far as possible "delays," of which the Midland passengers complained seriously.

The Midland Company also arranged to "work" the Manchester, Buxton, Matlock, and Midlands Junction Company's Railway, which extended from Ambergate to Rowsley, and in which line both the Midland and London and North Western Companies had considerable interest.

CHAPTER XV.

A COMING STORM. MR. HUDSON RESIGNS

AS previously mentioned, Mr. Hudson ascended to power in the year 1842, at the time when he and the members of the Shareholders' Committee took the position of the directors of the North Midland Railway Company; and as some of those directors who found it necessary to resign office were members of the powerful "Liverpool party," it naturally followed that Mr. Hudson "had no friends in Liverpool," and it is certainly remarkable that at the time of the amalgamation in 1844 the Liverpool directors appear to have been entirely passed over.

This may have been an accident, or possibly it was considered essential that the directors should reside near to the Midland system, or probably some of the other directors had greater claims.

Be that as it may, there is no reliable evidence available to account for the constitution of the first Midland Board beyond the statement of a director to the author that "we picked out the best men in the proportion of six, five, and four, from the three companies."

The "Liverpool party," however, considered that its capital and its importance demanded at least one, probably two, or even three directors, and it was no secret that the "party," rightly or wrongly, believed that it was "all Hudson's doings that their members were shut out."

The opposition to the leasing of the Leeds and Bradford line was, as Mr. Hudson remarked, "concocted in Liverpool," and a few days afterwards a meeting of the "Liverpool party" was held, when it appears to have been determined to attack the Midland system in general and Mr. Hudson in particular.

It must be remembered that in the early days of railways directors and officials had no information as to wear and tear or the cost of renewals, nor did any rules exist as to what sums should be charged to capital or to revenue.

One company would charge the entire cost of a new engine to capital, with the exception of the old-iron price obtained for the previous engine, whereas another company held that the whole cost of renewals should be paid out of revenue. There was no standard to follow, and each board of directors used its own judgment. Every statement of accounts published, therefore, furnished ample material for some attack. One shareholder would assert his opinion that sufficient had not been charged to revenue, that the property was not being properly maintained, and that the dividend was coming out of the capital; but another would as strongly hold that the dividend was far too small in consequence of the directors spending so much revenue upon permanent improvements.

The "Liverpool party" held meetings in that city frequently to consider the progress of its railway property, and professional accountants were employed to investigate each half-yearly statement in order to provide some of the members with materials wherewith to attack at the next meeting, and the Board of Directors was constantly asked to furnish some further details not given in the printed accounts.

Mr. Hudson, in the summer of 1848, replied with some warmth to the letter of a shareholder, and added that if he was to be pestered with such letters concocted in Liverpool he would leave the Midland. At the next meeting, in August, the shareholder consequently asked "if it is true that the Chairman is about to leave the Midland Railway?" to which Mr. Hudson replied that "he had no intention whatever of doing so."

The proceedings at this meeting had such an important bearing on subsequent events that we give a report of the proceedings as published at the time:—

"At the general half-yearly meeting held at Derby on Saturday, August 19th, 1848, Mr. G. Hudson, M.P., in the chair, there was an unusually large attendance, owing to a report in the newspapers that the Chairman was about to resign for the purpose of transferring his services to the London and York. After the usual review of the Company's position by the Chairman, a shareholder asked him if it were true that he was going to leave the line for the London and York. Mr. Hudson assured the honourable proprietor that he had no intention of leaving the Company (Hear, hear, and applause), and he would further say, that so long as he had health and strength and enjoyed the confidence of the proprietors, nothing on earth would induce him to quit the Company. (Hear, hear, and much applause.) He did not care what the promotion offered might be; he had naturally a warm affection for the Midland proprietors, and had always been received by them with such kindness that he should be unworthy of the name of Englishman if he should think of leaving them while he could be of

any use to them. (Applause.) Mr. Hudson then paid a fine tribute to the memory of George Stephenson, who had just died. At this meeting it was decided that in future the Midland proprietors should meet on Wednesdays instead of Saturdays."

These declarations by Mr. Hudson satisfied the shareholders for the moment, but the "fire" of opposition was not extinguished; it smouldered only to burst out into unexpected fury before many months, as the subsequent narrative will disclose.

The half-yearly meeting which was held at Derby on September 7th, 1848, took place in one of the sheds. The report stated that the goods and coal traffic showed the very satisfactory increase of £47,300, but the passenger receipts gave a serious falling off. This was due entirely to the fact that parts of the Great Northern and the Manchester, Sheffield, and Lincolnshire Companies' lines had been opened and were diverting or taking away the Midland passengers. In consequence of this falling off in receipts and the growth of the undertaking, as well as to better watch the interests of the Company, the directors announced that they had formed themselves into committees specially to control the large departments—Way and Works; Locomotive, Carriage, and Wagon; Traffic; and Finance.

The proceedings at this meeting have been described as "quiet" or "even uninteresting." However, those "in the know" were perfectly aware that this was not a sign of peace and tranquillity, but simply a lull before a great storm. The directors had previously undertaken to furnish to the "Liverpool party" the details and particulars for which it asked. Consequently until that information was compiled and forwarded it was practically impossible for further action to be taken. Immediately the required information was obtained a meeting was held in Liverpool on October 28th, 1848, when the whole management of the Midland Company was criticised adversely, and it was decided to raise important issues at the next meeting. Accordingly, on February 15th, 1849, the balance-sheet was called in question, and it was alleged that "it did not deal fully with the accounts"; a sum of £36,000 parliamentary charges had been put down to capital, but a debate upon the question was "cut short" by the statement of the Chairman that the directors were perfectly willing to charge that amount to revenue if the shareholders wished it.

A proprietor expressed his opinion that the Company made little or no profit on its coal traffic; this brought down upon him the statement of Mr. John Ellis that "it was even more profitable than their passenger traffic."

Attacks were next directed against the Chairman, and it was hinted that he had sold some shares.

Mr. Hudson strongly resented the insinuation, and stated that he had then about £17,000 in the Company, which was even a greater stake than he had previously held, and he asked the shareholders, "What motive can I have but to serve your interests in leaving my home, filled with friends, to travel all night in order to wait upon you to-day?" This question brought forth "loud applause." He warned the shareholders against playing into the hands of men who might have sold their shares and found it inconvenient to deliver them, and therefore wanted to depreciate the property. He (the Chairman) could not be accused of holding his position from mercenary motives. He only received £80 a year from the Company, had never put a relative into a post on the line nor trafficked in the shares, and his only object in retaining the post of Chairman was the satisfaction he felt in promoting the interests of the shareholders.

A member of the "Liverpool party" then proposed "the appointment of a Committee of Inquiry into the administration and accounts of the Company." Much amusement was caused by cries of "Liverpool again!" "That was concocted in Liverpool!" and a vote of confidence in the directors being proposed, it was carried by a vast majority and followed by rounds of applause and the waving of hats.

However, a few days after the meeting, when the published reports had appeared in the newspapers, a very considerable change was observed. Letters were received from some of the largest shareholders and best friends of the Company, expressing regret that the "Committee of Inquiry" was not granted. "Let them inquire," wrote one shareholder; "let them investigate. Let them look for themselves into the position of affairs; they won't rest till they do."

At the next Board meeting there was unmistakable information and evidence that a majority of the shareholders was decidedly in favour of a "Committee of Investigation."

Mr. John Ellis, Deputy Chairman, and the other directors had no objection whatever, their only desire being to carry out the wishes of the shareholders, and in view of the serious Great Northern competition they came to the conclusion that it would be well for the shareholders to see for themselves the injury which the London and York scheme was about to do to their company.

The Chairman, however, took an entirely different view. The vote of confidence in the directors had been carried amid "tumultuous applause." That, he considered, was sufficient. "Is this company to be

managed at Derby or at Liverpool? that is the question";—and it was evident that Mr. Hudson would rather resign than agree to a "Committee of Investigation." At the same period it became known that the York and North Midland Company and the York, Newcastle, and Berwick were entering into arrangements by which the east coast traffic would be handed over to the Great Northern system to be conveyed to King's Cross instead of to the Midland at Normanton, *en route* to Derby, Rugby, and Euston Square; and at the same time it was evident that passengers could not be expected to travel from York to London *viâ* Rugby when a quicker route was established *viâ* Peterborough.

An extraordinary general meeting, attended by about a thousand proprietors, was held in the goods shed at Derby on April 19th, 1849. Mr. John Ellis, Deputy Chairman, presided, and read the following important letter from Mr. Hudson:—

YORK, April 17th, 1849.

GENTLEMEN,

The approaching meeting of the shareholders renders it necessary for me to address you on the subject of the office which I have had the honour to hold as Chairman of your Company.

Forming parts of one great line of communication, the Midland, the York and North Midland, and the York, Newcastle, and Berwick Railway Companies have hitherto had one common interest to promote, and in watching over the development of them it has always been to me a pleasing reflection that I was contributing to the prosperity of each of the other companies. It was this which enabled me to discharge the duties of Chairman, confided to me by the shareholders of these different lines; and it is because I am apprehensive that circumstances have now arisen which must render it impracticable for any one person to preside over all these companies that I feel it requisite to make the present communication. It must be obvious to everyone that the Great Northern Railway, when opened, must of necessity materially affect the existing lines of railway in the district through which it passes. To the formation of that railway I gave my most uncompromising opposition. I believed its formation to be unnecessary, and felt that the benefits to be derived from it were not sufficient to justify the immense capital requisite for its construction. It pleased the Legislature to view the question otherwise, and the consequence is that this line will very shortly be brought into active operation. The existence of that Company cannot now be disregarded, and it may be that the interests of these different railways may not be found to be identical. Therefore it is that, after due deliberation, I have thought it right, and to be more satisfactory to the shareholders of the Midland Railway Company, to resign the office of their Chairman. I could not consent to hold the office without devoting every energy that I possess to the furtherance of their interests, regardless of any other company; neither would I consent to preside over the other two companies without being prepared to exert myself for the promotion of their prosperity, irrespective of the consequences which might result to any other company from the policy which they might decide on pursuing. Under these circumstances I feel that I best perform my duty to the shareholders by tendering my resignation of the office of Chairman. It is impossible for

me to do this without expressing the deep sense which I entertain of the generous confidence which has been reposed in me by my brother shareholders, and the high satisfaction which I have derived from the cordiality which has prevailed amongst the directors with whom it has been my good fortune to associate, and of the unanimity which characterised all our proceedings. This it is which has enabled the capabilities of your line to be brought into full activity.

I take my leave of you, gratefully acknowledging your past kindness and anxiously desirous for the continued prosperity of the undertaking with which I have been identified.

I have, etc.,

GEORGE HUDSON.

This letter was received with hissing. The Chairman of the meeting continued :—

“Gentlemen, that resignation has been accepted (Hear, hear), but whilst the letter would only seem to imply that Mr. Hudson has resigned the office of Chairman, we understand it as a resignation as a director altogether, and in that light it has been accepted by the Board (cheers), and that explains why I have taken the chair at this meeting.”

Mr. Ellis went on to explain that Mr. Hudson's remarks as to his having made an arrangement between the York and North Midland and the Great Northern had caused the Midland much anxiety. He (Mr. Ellis) had seen Mr. Denison, the Great Northern Chairman, who had assured him the arrangement did not extend to traffic, but only to making a line from Knottingley to Burton Salmon, to save the expense of going straight to York. He (Mr. Ellis) was a director of the London and North Western Railway, as well as a director of the Midland Railway, and thought these two lines natural allies.

The views of Mr. Ellis as to the Midland and the London and North Western being allies was no doubt perfectly correct, because at this period the London and North Western was taking the Midland traffic over its rails from Rugby to London.

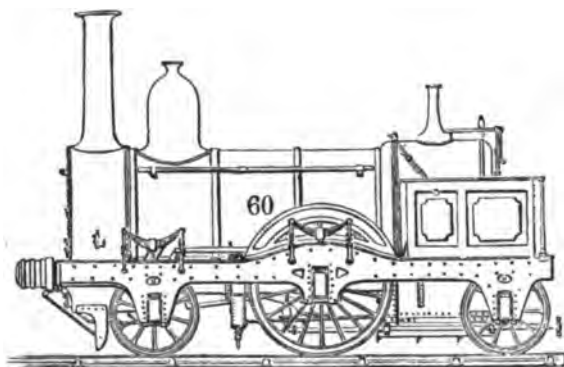
The references at the meeting to the Knottingley curve will be fully understood by a consideration of the following statement of facts, which were of an extraordinary character.

This curve extended from Burton Salmon on the York and North Midland to Knottingley on the Manchester and Leeds Company's Railway, and the Act authorising its construction received the Royal Assent on July 9th, 1847. The importance of this, however, could not be seen, and was never suspected until the Manchester and Leeds began to work in conjunction with the London and York (or Great Northern) *via* Askern Junction. But it was afterwards discovered that the York,

Newcastle, and Berwick Company and the York and North Midland, who had been previously entirely dependent upon the Midland for their connection with London and the south, had by means of this small junction curve another complete route to London available by means of the London and York Company's line.

This little link also completed the through east coast route from London, King's Cross, *viâ* Peterborough, York, and Newcastle, Berwick to Edinburgh, and thence to Glasgow.

As far as the York and North Midland and the York, Newcastle, and Berwick Companies were concerned it was a highly valuable connection—in fact, a fine stroke of policy. And Mr. Allport, who was then Manager of the York, Newcastle, and Berwick Railway



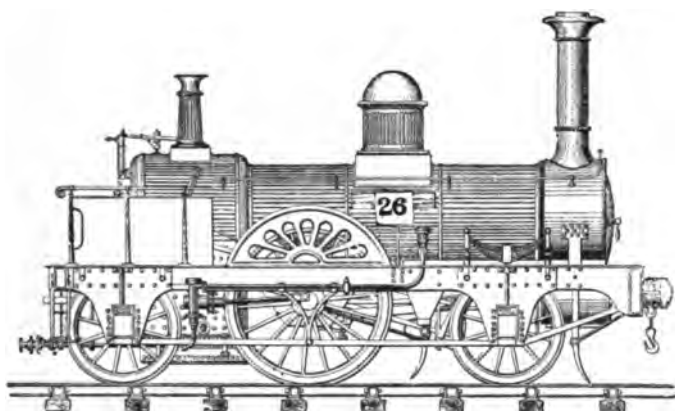
SHARP'S "60" CLASS, 1848.

Company, could not fail to have recognised the vast value to his Company of a second road to London.

But it was an altogether different thing with Hudson, who occupied the treble position of chairman of three companies, namely, the Midland, the York and North Midland, and the York, Newcastle, and Berwick, whose systems extended from Rugby to Newcastle. According to the old doctrine, no man can serve two masters; but Hudson tried to serve three, and so long as the interests of the three companies did not come into conflict it was to their mutual advantage to have one common chairman. But when, as in this case, the interests of the two most northern companies were preferred to, or clashed with, those of the Midland or more southern company, his position became impossible. The two most northern companies were planning and carrying out an arrangement which could not fail to

be, and was intended to be, a deadly blow against the Midland, and that placed Mr. Hudson in an untenable position, which he ought never to have consented to occupy. His position was also aggravated by the fact that as the Bill for the Knottingley curve had been passed on July 9th, 1847, this deadly blow to the Midland had actually been delivered at the very time he was making those profuse professions of friendship and devotion to the interests of the Midland shareholders.

When the truth leaked out and the real position was revealed it excited the greatest indignation, and for a time caused consternation amongst the directors and shareholders of the Midland, as they considered that their interests had been shamefully betrayed.



E. B. WILSON'S "JENNY LIND" CLASS, 1847.

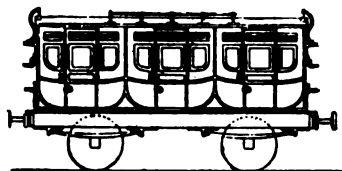
Thus Mr. Hudson terminated his connection with the Midland, both as Chairman and as a director. A "Committee of Investigation" was then appointed, upon the motion of Mr. Wylie, of Liverpool, to examine into the management and affairs of the Company, with instructions to report to an adjourned meeting.

What is known as a "Budget express" made a very notable run on Saturday, February 19th, 1848, in order to convey copies of *The Times* and other papers containing reports of the Budget debate, which did not conclude till one o'clock in the morning. The express ran from Euston to Rugby, thence over the Midland system to Normanton, to York, Newcastle, Berwick, Edinburgh, and Glasgow. It left London, Euston, at 5.35 a.m. and reached Glasgow at 3.57 p.m., completing the journey of $470\frac{3}{4}$ miles in the remarkably quick time

of 10 hours 22 minutes. The detentions amounted to 50 minutes, including 8 minutes occupied in passing from Gateshead to the Newcastle Station, and 7 minutes in passing from Tweedmouth to the station at Berwick, thus reducing the actual railway travelling to 9 hours and 32 minutes, being at the rate of upwards of 50 miles an hour. The journey from London to Rugby was done in 1 hour 40 minutes, and from Rugby to Normanton, on the Midland, in 2 hours 6 minutes, being at the average rate of 56 miles an hour. The couriers, Mr. Beswick, Travelling Inspector of the Midland Railway,



FIRST-CLASS COUPÉ CARRIAGE



SECOND-CLASS CARRIAGE

(Midland Railway, 1848)

and Mr. Lockey, after spending an hour in Glasgow, returned to Edinburgh by the 5 p.m. train, thus showing the possibility of breakfasting in London, dining in Glasgow, and spending the evening in Edinburgh.

The train passed over the Midland system as follows :—

Distance from Rugby.					a.m.
m.	ch.				
—		Rugby, arrived	.	.	7.15
—		Rugby, left	.	.	7.29
20	5	Leicester, passed	.	.	7.52
32	38	Loughborough, passed	.	.	8.5
49	2	Derby, South Junction, arrived	.	.	8.25
—		Derby, South Junction, left	.	.	8.27
72	62	Chesterfield, passed	.	.	8.54
88	48	Masborough, passed	.	.	9.10
112	49	Normanton, Altofts Junction, arrived	.	.	9.35
—		Normanton, Altofts Junction, left	.	.	9.37

Mr. Hudson alluded to this train at the Midland meeting held the day it was run, saying they attained the speed at a less cost and in a better manner than on the broad gauge, and that the run was a proof that the railway was in excellent order. Mr. Hudson's observations were more than justified, as the speeds were very remarkable. From Rugby Station to Derby South Junction, a distance of 49 miles 2 chains, was run in 56 minutes, or an average speed

throughout of 52½ miles per hour. Engines were changed in two minutes, and the run was continued to Altofts Junction, Normanton, a distance of 63 miles 49 chains, which was covered in 68 minutes, or an average speed of fully 56 miles an hour. The run from Rugby to Derby was performed by one of Sharp's engines of the "60" class, and from Derby to Leeds by one of Wilson's well-known "Jenny Lind" engines, both of which are illustrated, as well as the carriages of the period.

It ought to be remembered in considering this remarkable run that rails did not at the time exist from London to Edinburgh. There were two gaps—one of over a mile between Gateshead and Newcastle, over the River Tyne, owing to Robert Stephenson's high-level bridge not being completed; and the other between Tweedmouth and Berwick, across the River Tweed, where the Royal Border Bridge was not ready for traffic. These two gaps were traversed by coaches and horses at full gallop, a wonderfully quick transfer being effected in each instance.

CHAPTER XVI.

MR. JOHN ELLIS ELECTED CHAIRMAN

THE upheavals related in the previous chapter necessitated the election of a new Chairman, and the prosecution of the investigations which the shareholders had directed to be made. When so much doubt and uncertainty had been created, it was essential to the well-being of the Company that a very strong chairman should be secured to take charge and direct its policy; and further that the Committee of Investigation should be such as to command the entire confidence of the proprietors.

The choice of the directors fell upon Mr. John Ellis, the Deputy Chairman, who had given ample evidence of his great ability, capacity, and worth, and as being a man in whom the greatest confidence could be reposed. Accordingly, on May 7th, 1849, at a meeting of directors, Mr. John Ellis, M.P., of Leicester, was unanimously elected, Mr. Hudson's resignation having taken effect on April 19th.

Mr. Samuel Beale, of Birmingham, who, previous to the amalgamation, had been Chairman of the Birmingham and Derby Junction Railway Company, was elected Vice-Chairman.

These appointments gave great satisfaction, in view of the recent rather painful experiences of the Company.

The Shareholders' Committee had the services of professional accountants, and investigated the books, leases, and every branch of the Company's business. Mr. Barlow, the resident engineer, satisfied the committee that when an older set of rails was replaced by heavier and better rails, that revenue should be charged with the original value, and capital should pay for the permanent benefit to the property. Mr. Robert Stephenson, with reference to the locomotive stock, also expressed his view that when an engine of an old light pattern was replaced by a new heavier engine, that the difference in original cost was a permanent improvement, and that the amounts which had been hitherto carried to capital had been legitimately so placed.

The report of the committee was completed and dated August 15th,

1849, and proved that the published accounts were in accordance with the authentic books of the Company. Several suggestions were made in the report, one being that there should be a stipendiary chairman, who should devote his whole time to the interests of the Company.

Naturally the members of the "Liverpool party" were extremely disappointed at the result of the investigation. Mr. Wylie even moved an amendment when the adoption of the report was proposed, and remarked, "A more incomplete and inconclusive document I have never seen." However, he ultimately withdrew the amendment, and the report was adopted unanimously.

Thus the great storm created on October 28th, 1848, "fell flat and went off in smoke," and the shareholders had the satisfaction of knowing that the charges of mismanagement which had been frequently made were not founded on fact.

The new line from Burton to Coalville having been opened and the Swannington railway widened and improved to Desford Junction, the new connecting line running thence to Knighton Junction, near Leicester, was brought into use on August 1st, 1849, and a through service of trains established between Burton, Leicester, and Melton to the Eastern Counties Railway Station at Peterborough.

Not only did the Burton branch form a communication between east and west, but for the first time it put the Leicestershire collieries into the excellent position of being able to send their coal by rail to all parts. No longer had the coal to be conveyed to the West Bridge Wharf, there to be loaded in boats, as rails now existed in connection with the main line. This was a very severe blow to the canals, and brought a large and valuable coal traffic to the Company. Another useful link was the Kirkby and Mansfield branch, opened in October, 1849.

The Great Northern competition was now becoming very disastrous to the Midland traffic, a further section of that railway being opened between Askern Junction, north of Doncaster, and Retford, thus enabling the Great Northern to compete more especially for the traffic between Leeds and the south *via* Peterborough.

In September, 1849, the Great Northern tried still further to increase their traffic by actually running over the rails of the Midland Company into Leeds, which, of course, was then the extreme end of the Midland Company in the north. This attempt led to a very extraordinary incident, which resulted in an effort to run a Great Northern engine and train on the Midland system, and an equally determined resistance on the part of the Midland, who pulled up the connecting metals.

The North Midland Railway Company and the Manchester and

Leeds Company had from the first been on the most friendly terms. So much so that, to save the making of two lines side by side from Normanton to Leeds, the North Midland Company agreed to build a booking-office for the Manchester and Leeds Company at its Hunslet Lane Station, Leeds, and to make the Normanton Station one for the joint use of both companies, as well as for the accommodation of the York and North Midland. The Manchester and Leeds passengers were thus allowed to use the Midland line between Leeds and Goose Hill Junction, south of Normanton. In the interests of the Manchester and Leeds, the Wakefield, Pontefract, and Goole Railway Company formed its line; and for the same reason, namely, to avoid duplicate lines, the Midland Company agreed to allow the Wakefield Company (which in the meantime, in the session of 1847, had amalgamated and become the Lancashire and Yorkshire) to run its trains from Methley Junction to Leeds. But with the introduction of the Great Northern system and the formation of the Lancashire and Yorkshire Railway the whole situation changed. That original friendship between the North Midland and the Manchester and Leeds terminated. The North Midland had become Midland, while the Manchester and Leeds and the Wakefield, Pontefract, and Goole had amalgamated and become the Lancashire and Yorkshire Railway Company. The latter line had a junction with the Great Northern at Askern, and had become a powerful ally of the Great Northern. So strong was the friendship between the Lancashire and Yorkshire and the Great Northern that the first-named Company tried to assist its new-found friend to run over the Midland line from Methley to Leeds by the following strategy.

A short time before the Doncaster Races, which took place in September, 1849, the Lancashire and Yorkshire Company, as usual, compiled a list of special trains which it proposed to work over the Midland rails from Leeds to Methley *en route* to Doncaster. It was quite understood that some of the carriages forming some of the trains would be lent by the Great Northern Company to the Lancashire and Yorkshire, and worked down to Leeds as empty carriage trains the previous day, it being presumed that the trains would be worked by Lancashire and Yorkshire engines and officials, as no other company had running powers over the line.

To the great surprise of the Midland Company, however, when the Lancashire and Yorkshire Company's notice was issued to their servants it was found that some of the trains booked to run over the Midland Railway from Leeds to Methley had as a footnote these words: "This train will be worked by the Great Northern Company." It was also

discovered that for several days Great Northern drivers had been travelling on the Lancashire and Yorkshire engines to learn the road to Leeds.

The Midland Company at once communicated with the Lancashire and Yorkshire Company, protesting against the Great Northern working the trains on the ground that they had no running powers. The reply was that the Lancashire and Yorkshire had, and that they could by this means let the Great Northern into Leeds. The Midland altogether repudiated any such contention, and then the Lancashire and Yorkshire fell back upon the excuse that they were short of engines, and had hired a few from the Great Northern.

The Midland, however, declared that they would not have engines and men of a company which had no running powers on their lines. The Lancashire and Yorkshire argument then was that a hired engine was to all intents and purposes their property, and that they would send the trains to Leeds as booked.

The Midland answer to this was that the junction would be pulled up; and when news was received that the empty Great Northern trains had actually left Doncaster on their way to Leeds, a gang of Midland platelayers at once set to work and removed the rails, thus preventing the passage of the trains on to the Midland at Methley.

On the approach of the trains all the usual signals were given and the trains brought to a stand. Finding progress in that direction impossible, the Great Northern train was run back to Pontefract, thence to Wakefield, and back to the Goose Hill Junction, Normanton, where another junction with the Midland Railway existed. This was just as much Midland, and the legal rights of the matter were just as strong at one point as at the other; but the Midland, having made their protest and not wishing to inconvenience the public, allowed the "hired" Great Northern engine to proceed to Leeds, leaving the question of right to be afterwards legally determined.

But although this was a highly technical point and one of great interest and importance in railway law, a legal decision was never taken; for the Great Northern and Lancashire and Yorkshire Companies at once took up this position, that if they could not use the Midland line they would have one of their own, so as to get to Leeds without using the Midland line from Methley. They further proposed other extensions from their intended line.

Under these circumstances the Midland had to choose the least of two evils, namely, to allow the Great Northern to run over their lines from Methley to Leeds and stop there, or allow the Great Northern to construct a line which might afterwards be greatly

extended in unknown directions. The result was that the Midland determined to concede running powers to the Great Northern, the Lancashire and Yorkshire, and to the York and North Midland railways into their Wellington Station at Leeds. This was confirmed by the shareholders of the Midland at their meeting on August 23rd, 1850.

At the meeting previous to the one at which the above memorable dispute was ended, namely, that held at Derby on February 27th, 1850, the shareholders had to face the fact that the receipts for the past half-year were only £600,000, or a decrease of £20,000, and that the dividend for the half-year upon the ordinary shares was only £1 5s.

Mr. Wylie addressed the meeting for a period of about two hours, and stated that he represented 1,200 shareholders in the Liverpool district, who held shares to the amount of £1,623,000.

He objected to the guarantees and leases and especially to the Leeds and Bradford lease, and finally moved a resolution to "re-construct the Board"; in other words, to find room for the members of the "Liverpool party." However, after full discussion the resolution was rejected, and the shareholders returned to their homes after a sitting of no less than six hours.

At the half-yearly meeting held on August 23rd, 1850, the dividend upon the ordinary shares fell to only 16s. for the half-year, and the shares which but a few years previously were at £160 were now actually to be bought for £32.

The extension curve between Saltley and the London and North Western Railway at Birmingham, in place of the "lift" at Saltley, was completed in the autumn of 1850. The Erewash Valley and Mansfield lines were in use, as were also the two junctions at Stoke Prior and Abbotwood, to enable the Midland trains to run over the Oxford, Worcester, and Wolverhampton Railway *via* Worcester. It is worthy of note that every portion of the line which the Company proposed to make at that time was completed and opened for traffic, the total being about 500 miles. This fact, together with the coal traffic from the Erewash Valley and Leicestershire, increased the goods and mineral receipts by £32,000 during the second half of the year 1850, but the Great Northern competition caused a further falling off of £8,000 in passenger traffic, and the dividend paid in February, 1851, was 25s., being a considerable improvement upon the 16s. paid on the previous occasion.

The Leeds and Bradford lease, which had previously proved such a bone of contention, on two further occasions came up for discussion. A Liverpool shareholder, who brought forward the question on

August 23rd, 1850, boldly moved a resolution with a view to its entire repudiation. The reason for advocating this unusual and very extraordinary course was this, that while the Leeds and Bradford shareholders were getting their guaranteed dividend of 10 per cent. per annum, according to the lease, without any risk whatever, the Midland ordinary shareholders were having to face the increased competition of the Great Northern, with the result that the dividend on ordinary stock for 1850 was only £2 1s. per cent. The ordinary shareholders failed to see why the Leeds and Bradford shareholders should be placed in such a highly favoured position. The Chairman, however, warned the proprietors against interfering with an engagement which they had previously sanctioned, even although it was at a time when they were all too sanguine as to the value of railway property. He read a letter from Lord Lifford, in which he said that "any attempt to disturb the lease would put an end to confidence in railway property and damage the characters of those who did it as honourable mercantile men"—a view which was confirmed by the shareholders.

The Leeds and Bradford Railway for the last time received the attention of the shareholders at a special meeting held on June 4th, 1851, when a Bill which had passed the House of Commons required approval in order to enable the estate and interest of that Company to become the property of the Midland. The Chairman pointed out the great importance of the line, and trusted the opposition would be withdrawn. Mr. Brancker, of Liverpool, expressed the opinion which he had consistently held, that "the scheme was a preposterous undertaking, concocted in iniquity." However, at the wish of Mr. Ellis, he did not continue to oppose the motion, and as Mr. Wylie considered the Bill was the best way out of the whole difficulty, the resolution to acquire the line was carried unanimously, and it is no secret that all parties were heartily glad to see this old Leeds and Bradford question finally set at rest by the Act of 1851.

The Great Exhibition of 1851, which at one time was expected to be a source of greatly increased revenue to the Midland as well as to other companies, proved a serious disappointment, for so far from yielding an increased return, it entailed a loss of revenue to the Midland of between £400 and £550 per week whilst the Exhibition was open. There was, it is true, a very heavy traffic from the north to Rugby *en route* to London, but the great number of passengers to London disturbed the passenger traffic on the other portions of the line; and other centres of interest and attraction, such as Matlock, Scarborough, and Cheltenham, were quite neglected. Moreover, as the

Great Northern fare from Leeds to London was fixed at only 5s., there was but a small profit to be obtained from the Exhibition traffic.

In the following year (1852) the directors became firmly convinced that it was of vast importance to the prosperity of the Midland system that the Company should establish more or less direct connections with London, and negotiations were entered upon with representatives of the London and North Western Railway Company with a view to amalgamation. So essential was it considered that the Midland should be permanently identified with a line having a terminus in London that the amalgamation scheme was all but completed. The Midland terms were finally £60 in proportion to the London and North Western shares of £100, and the dividend to be *pro rata* on these amounts. The London and North Western would not agree to these terms, and offered amalgamation on the basis of £57 10s. per share, and on this difference of 50s. per share between the parties the negotiations were broken off. But meanwhile the Midland Company had established other arrangements, which enabled them to deal with their growing London traffic until the time was ripe for another forward movement.

CHAPTER XVII.

THE NORTH WESTERN RAILWAY COMPANY

THIS Company, which, to avoid confusion with the great Company known as the London and North Western was usually termed the "Little" North Western, was formed by an Act passed on July 30th, 1846, and its object was to construct a line commencing at a junction with the Leeds and Bradford Railway extension at Skipton, and passing through Settle extend to the coast at Morecambe, with a branch from Clapham to Ingleton, to join an intended communication with the Lancaster and Carlisle Company's system at Low Gill for north traffic; and a short curve at Lancaster Green Ayre to join the same Company's system at Lancaster Castle Station for south traffic.

The line was opened at various dates and in six sections, the first section being that extending from Lancaster Green Ayre to Poulton Station and harbour, now known as Morecambe. This was opened for traffic on Whit-Monday, June 12th, 1848, with a train service hourly in each direction from 9 a.m. till 5 p.m., and less frequently at other hours. At that time the Morecambe Station was a purely temporary structure, pending the completion of the permanent buildings and the erection of the North Western Hotel, which in 1871 had its name changed to the "Midland Hotel" on the Midland acquiring the undertaking. Mr. Pudsey Dawson was the first Chairman of the North Western Company, and two Midland directors were on the original Board, namely, Mr. Murgatroyd and Mr. Waddingham. The local time-tables issued at the time were headed "North Western Railway, Morecambe Branch," and in them notice was given that passengers holding return tickets issued by the third-class trains might return by any train during the day. This seems to imply that third-class return tickets were issued, probably a rare thing at that time.

The various sections of the line were opened as follows :—

Morecambe to Lancaster Green Ayre . . .	June 12th, 1848.
Skipton, Clapham Junction, and Clapham-Ingleton Branch . . .	July 30th, 1849.
Lancaster Green Ayre to Wennington . . .	Nov. 17th, 1849.
Lancaster Green Ayre to Lancaster Castle . . .	Dec. — 1849.
Wennington to Bentham . . .	May 2nd, 1850.
Bentham to Clapham Junction . . .	June 1st, 1850.

The opening of the completed line, forty-seven miles in length, took place on June 1st, 1850, when through trains from Leeds, Bradford, and Skipton ran to Morecambe. The trains included portions for Kendal, which were detached at Lancaster Green Ayre and conveyed to the Castle Station; from thence they were taken forward by the Lancaster and Carlisle Company, and the road coach, which had run from Ingleton to Milnthorpe on the opening of the Ingleton section, was, of course, discontinued, as was also a conveyance which had run between Bentham and Clapham Junction previous to the opening of that section.

Thenceforward from this period the Midland Company obtained communication by means of the "leased" Leeds and Bradford line to Skipton, and by the North Western line from Skipton to Lancaster, Castle Station, and thence by the Lancaster and Carlisle Company's Railway, to Scotland by an alternative route, and were no longer dependent upon the York and North Midland, the York, Newcastle and Berwick, and North British Railways for their communication and for Scotch traffic.

The Midland, who had great interest in, and was always on the most friendly terms with the North Western, and being anxious to secure more or less permanent provision for its traffic to and from that district, in May, 1852, undertook for twenty-one years the working of the "Little" North Western.

This working agreement would not have expired till 1873, but as early as 1857, under parliamentary powers, both companies resolved that the line be leased to the Midland Company in perpetuity as from January 1st, 1859, on payment "equal to an annual net dividend on the ordinary capital at rates ranging from $1\frac{1}{2}$ per cent. in 1859 to $3\frac{1}{2}$ per cent. (the maximum rate) in 1864, with such additional dividend (if any) as one-half the excess net earnings of the North Western undertaking will pay beyond such $3\frac{1}{2}$ per cent."

On July 11th, 1864, a further change was made in the shares of the North Western Company, which received parliamentary sanction, whereby the £20 shares, representing a total capital of £785,560,

were divided into one share of £12 each (total capital £471,336) and another of £8 (total capital £314,224), the former or £12 shares bearing a fixed perpetual preferential dividend of 5 per cent., and the latter or £8 shares taking $1\frac{1}{4}$ per cent., which would absorb the whole of the residue of the rent, plus "any contingent advantage that may arise out of the lease to the Midland." This lasted for six years, namely, till August, 1870, when a new arrangement was agreed to with the Midland, whereby the Midland guaranteed a graduated dividend till 1874, and afterwards at 5 per cent. in perpetuity; and this receiving the sanction of Parliament, the Midland



INGLETON VIADUCT

were able to obtain the absolute conveyance of the North Western to them on January 1st, 1871, or two years before the original arrangement would have expired.

Thus the Midland obtained entire possession and control of an invaluable outlet to the north-west, as well as securing a base for their extension from Settle to Carlisle, and from Wennington to the Lake District. Further than this, by arrangement with the Lancashire and Yorkshire Company, Hellifield became the point of junction between the Midland through traffic from Manchester and Liverpool to Scotland.

More recently it lent itself to the great development now in progress by the construction of Heysham Harbour, which will add immensely

to the utility and value of this section of the Midland, for it is intended that Heysham Harbour will be an important port for passenger and goods traffic between the Midland system, the Isle of Man, and the north of Ireland.

With a view to connecting the Furness Railway Company's system with the Midland, so as to give through communication *viâ* Barrow-in-Furness to the Lake District, the Isle of Man, and the north of Ireland, the Furness and Midland Companies were authorised, by an Act of June 22nd, 1863, to construct a joint line $9\frac{1}{2}$ miles in length, extending from Wennington to Carnforth. The capital was £150,000, with £50,000 borrowing powers, and it was provided in equal shares by both companies. This little connecting link has proved an invaluable one for the Midland Company, both as regards its mineral traffic and the influx of passengers which sets in during the summer season to the Lake District and the Isle of Man.

Another phase of the delicate relationships between various companies as to what may or may not be done under what is known as running powers arose at Nottingham, and in view of the circumstance that these early cases have exercised an important influence on all subsequent decisions in railway law the details become interesting.

A railway company having the long title of the Ambergate, Nottingham and Boston, and Eastern Junction Railway had obtained powers for the construction of a line extending from Ambergate to Nottingham, thence to Grantham, Boston, and Spalding; but only the portion between Nottingham and Grantham was constructed, and at the last-named town it was connected with the Great Northern main line, while at the Nottingham end the Midland gave the little Company running powers for its trains into the Midland station. Shortly after the opening, arrangements were concluded between the Ambergate and Great Northern companies, by virtue of which the Great Northern claimed a right to work its own engines and trains into the Midland station at Nottingham. This contention was resisted by the Midland on the ground that concessions made by the Midland could not be transferred to another company without their authority or sanction, and an injunction was obtained. The Great Northern Railway Company, however, in spite of these legal disabilities, attempted to exercise running powers, and did on one occasion (August 1st, 1852) run one of its engines and trains into the Midland station. But it was discovered that it was much easier to run the train into the station than to get it out again, for the Midland officials proceeded to seize the offending engine which had set the injunction at defiance. Midland engines

were placed at each end of the Great Northern locomotive, and although the driver made a desperate effort to get his engine away, it was carried off as "a prisoner of war" and locked up in a Midland engine-shed. So as to be certain that there should be no escape the rails leading to the shed were pulled up, and there the Great Northern engine remained for seven months. At the end of this period it was returned to the Great Northern, on the Ambergate Company agreeing to build its own station at Nottingham and the Great Northern Company to keep clear of the Midland lines. Thus the London Road Station, erected at Nottingham for the accommodation of the Great Northern by the Nottingham and Grantham Company, was placed in close proximity to the Midland line.

A GREAT SCHEME THAT FAILED

We now come to deal with one of the most important and remarkable projects in connection with the whole of the railway systems north of London, and in which the Midland Railway Company was the pivot upon which the whole scheme turned. The London and North Western had their line and their terminus in London; so had the Great Northern, but the Midland were dependent on the grace and favour of others. The Midland, however, was a growing power, and accordingly her great rivals, the London and North Western and the Great Northern, were anxious to absorb her. And, curiously enough, the Midland had two "proposals" for amalgamation within two days. On August 14th, 1852, the Secretary of the London and North Western wrote to the Midland Company, informing them that they were prepared to discuss the question of a closer union or amalgamation of the two undertakings. The importance of this communication was greatly enhanced by the receipt of a similar communication from the Chairman of the Great Northern to Mr. John Ellis, the Chairman of the Midland Company. What these negotiations ultimately resulted in was a gigantic scheme by which the London and North Western, the Midland, and Great Northern Companies, which controlled all the traffic north of London, should be amalgamated. The parties, after protracted correspondence and discussion, had all practically agreed upon the terms, which were to be determined by three arbitrators of great eminence, and all the parties had expressed their ardent desire for amalgamation with the view of restricting competition and avoiding duplicate lines, stations, and the running of duplicate trains. The first practical step for the accomplishment of this object was the introduction into Parliament of a Bill to amalgamate the London and

North Western and the Midland Railway Companies in 1853. The shareholders of both companies sanctioned the scheme, and the Bill was promoted and backed by the most powerful influences. Parliament, however, considered the project in an entirely different light. Looking at the matter from a national point of view, it established a most important precedent by declaring against the amalgamation of very large railway companies. This first part of the scheme having failed to obtain parliamentary sanction, involved the whole of the gigantic amalgamation in complete failure.

CHAPTER XVIII.

LEICESTER AND HITCHIN

THE enormous increase of railway traffic all over the country, a vast proportion of which was seeking its outlet in London, brought about a great change. The London and North Western at this period had to deal, on two pairs of lines from Rugby to London, not only with its own Irish, Scotch, Liverpool, and Manchester traffic, but also to find accommodation for the whole of the traffic of the Midland and its allied companies from Rugby to the south. No doubt the London and North Western did their best, but they speedily found out, as a matter of course, that there is a limit to the carrying capacity of an up-and-down line, and the result was that there were serious delays to the Midland traffic, which called for grave consideration on the part of the Midland directors, who were ultimately obliged to reconsider the Leicester and Hitchin line as the only possible way out of their difficulties.

The Leicester and Hitchin project had previously played a very important part in the policy of the Midland in the eventful years 1845-7, which must be described.

As at this period (1845) the Midland Company was working upon very friendly terms with the London and Birmingham and handing over a large traffic at Rugby, it may at first sight appear somewhat extraordinary that its Chairman and large shareholders should be parties to a rival route towards London; we have consequently to turn our attention to events which were taking place in the district between Hitchin, on the Great Northern, Bedford, and Leicester.

A so-called independent railway company had been formed under the name of the "Leicester and Bedford," to commence at Hitchin by a junction with the Great Northern, to run thence through Bedford, Wellingborough, Kettering, Harborough, and Wigston to Leicester, where it was to form a junction with the Leicester and Swannington Railway, the design being for the Leicestershire coal to be conveyed from the Leicestershire coalfields district to London, King's Cross,

via Leicester and Hitchin. The Leicester and Swannington line at that time was quite isolated, and had no communication with any other railway company; and was, of course, consequently without railway connection with London, the whole of the coal having to be forwarded to the Metropolis by canal from Leicester, with an alternative canal route from Ashby.

The Leicester and Bedford scheme, of course, "received the cordial assistance" of the Great Northern Company, as it naturally would, considering that it was to provide railway communication extending into the very centre of the Midland district, with the further possibility of greater developments, which would have been a serious menace to the Midland.

The counter moves to this scheme were (1) the purchase by the Midland of the Leicester and Swannington Company; (2) the purchase of the Ashby Canal Company and its tramroads; and (3) the formation of a so-called independent company known as the South Midland, of which Mr. Hudson was Chairman, which proposed to run over the very same route from Wigston Junction to Hitchin Junction, and this scheme, of course, "received the cordial assistance" of the Midland.

The Leicester and Bedford and South Midland each took great pains to disseminate the notion that the other was a "sham line."

Each one stated that the other was not an "independent company"; that the other was got up to serve the interests of the Midland or the Great Northern, as the case might be; that one was for the purpose of upsetting the other.

At a meeting of the South Midland Railway Company, held at Derby on May 2nd, 1846, Mr. Hudson, the Chairman of that line, explained that their main line was to extend from Leicester to Hitchin, and had two branches, which formed the subject of separate Bills, namely, the Huntingdon branch and the Northampton and Bedford line.

He hoped that it would not be disagreeable to the proprietors; but the directors were unanimous in the opinion that they should proceed with the Bills, as nothing had occurred to alter their views since they first embarked on the undertaking. They were satisfied that that district required to be supplied with railway communication, and had received the sanction of the proprietors of land on the line, as well as of towns in its neighbourhood. Earl Fitzwilliam, Lord Northampton, Earl Spencer, and others were strongly in its favour. The line would go through an agricultural country, and would give the Midland Company a communication with the south.

He did not think anything had occurred to induce them to abandon an undertaking which had been so well considered and approved of by people locally interested. They had received notifications from holders of 36,000 shares in favour of continuing, and only of fifty declining to proceed.

Mr. Knight said he, as a promoter of the South Midland, could contradict the story that it was promoted by the Midland for the purpose of upsetting the Leicester and Bedford.

The Chairman stated that some arrangement for working the South Midland line might be made with the Midland Company, they having themselves an interest in it, and therefore being likely to meet the proprietors in a manner satisfactory to all.

The resolution in favour of proceeding both with the main line and the branches was carried.

On the other hand, at a meeting of the rival Leicester and Bedford Company, Mr. Whitbread, the Chairman, declared his belief that the sole object of the South Midland scheme was to floor the Leicester and Bedford, and that they were quite content to be floored themselves so long as the other line was floored also. This was met by "flat denials."

After considerable fighting it was found that the honours rested with the Midland, who, by the purchase of the Leicester and Swannington and the Ashby Canal, played trump cards, which secured the very traffic which the Leicester and Bedford scheme was specially designed to obtain. It was arranged first that the South Midland should take over the Leicester and Bedford scheme, and afterwards that the two independent companies should be dissolved, and that the Midland should obtain an Act for carrying it into effect.

The Leicester and Hitchin Act was obtained in 1847, but was afterwards abandoned, as at that period the line was not considered necessary in view of the better accommodation which the London and North Western agreed to give the Midland over the line from Rugby to Euston; and thus the South Midland Company had attained its object, which was to keep the Great Northern Company and its friends away from Leicester.

The powers obtained in 1847-8 for the formation of this line having lapsed, it became necessary to obtain a new Act, which was passed in 1853.

Under this new Act the line commenced at Wigston North Junction near Leicester, on the Company's Leicester and Rugby section, continuing thence to Great Bowden Junction, where it joined the Rugby and Stamford (single line) branch of the London and North Western

Railway. It used this line, which was doubled for the purpose for a distance of sixty-six chains, to Harborough Junction, the station there being also granted for the use of Midland traffic. This arrangement continued for many years, but was subsequently altered, Market Harborough being made a joint station with independent lines for both companies; and this vastly improved arrangement came into operation on June 28th, 1885.

The original Midland main line continued from Harborough Junction up the Great Desborough Bank, on to Kettering and Wellingborough (where a branch was made to the London and North Western system), and forward to Bedford. Here a branch was made to connect with the London and North Western Railway, and a short distance farther on the Midland crossed the London and North Western Bletchley to Cambridge line on the level at right angles, after which it runs forward to Hitchin Junction on the Great Northern system. The total distance from Wigston to Hitchin Junction was 62 miles 9 chains. It may be stated as a curious fact that the mile-posts on this section of the line have never been altered, but up to the present date show the distance from the Great Northern Junction at Hitchin.

At Hitchin the Midland Company provided their own goods station, but they used the Great Northern station for passengers.

The Midland Company further obtained running powers over the Great Northern system to King's Cross, and also by agreement the use of the Great Northern coal sidings at London; but the Midland built its own goods station at St. Pancras, with a short connecting line to the Great Northern.

In case of any block or interruption to traffic on the Hitchin line, a curve was constructed, 23 chains in length and known as the North London incline, which enabled the Midland to send its goods to the docks served by the North London Company, and also rendered it possible still to send goods and traffic *via* Rugby to Camden Station and thence over the North London Railway to the incline junction. The Leicester and Hitchin line was opened for mineral traffic on April 15th, 1857, and on the 22nd of the same month it was opened for goods traffic, and through trains ran to the Midland goods station, London, *via* the Great Northern Railway.

The Leicester and Hitchin works and stations were completed by Mr. Brassey for the official inspection of Colonel Yolland on April 29th, 1857. The formal opening took place on May 7th. The first train, of eighteen carriages, left Hitchin at 7.33 a.m., passed Bedford at 8.15, and reached Leicester at 10.50; it was distinguished by a red flag. At Bedford immense crowds were waiting at the station from as

early as 7 a.m. to take their places, nearly three thousand tickets having been issued. All the shops were closed and business suspended by order of the Mayor. Children from the schools and many inmates of the workhouse were treated to a trip. The first train, consisting of sixteen first-class and fourteen second-class carriages, started at 9.2 a.m. The second train, of thirty thirds, left at 9.16, both reaching Leicester "without the least accident or delay." These trains were distinguished by white flags. At Kettering and Market Harborough also the day was observed as a holiday. A train of twenty-nine coaches, of all three classes, left at 9 a.m., Harborough at 9.40, and got to Leicester at 11, marked by green flags. Though there were more than one hundred coaches and six engines to return from Leicester, "they all reached their destinations without anything occurring to mar the pleasure of the day." Nearly 5,000 tickets were taken for this trip. Regular public traffic began next day, May 8th, 1857.

At first the Midland did not run any through trains, the passengers having to change into Great Northern trains at Hitchin, which took them on to King's Cross. This was found to be a serious inconvenience, and the Midland, having running powers, began on February 1st, 1858, a service of through trains to and from the Midland system from King's Cross. Thus the Company obtained its first direct hold on London traffic, which has since had such a marvellous development.

In consequence of this opening, the Wigston and Rugby line, which had been a main passenger route of the country, now sank into the position of a purely local branch.

At the Midland meeting, February 18th, 1858, Mr. Ellis stated that the construction of the Leicester and Hitchin line was the wisest piece of policy the Company had ever pursued. Never was a million of money laid out to better advantage. If they did not earn a shilling on the line, it was worth all the money laid out upon it, because it placed them in an independent position.

Mr. John Ellis, who, as we have seen, was a founder of the line from the earliest commencement, and as Chairman since 1849 had carried the affairs of the Company safely through very troubled and difficult times, desired to resign his position. Mr. G. B. Paget, on December 2nd, 1857, accepted the office, but before he was able to take the chair at a meeting he was unfortunately struck down by a serious illness, and died January 25th, 1858. Mr. Ellis, therefore, under these sad circumstances consented to hold the office until March 3rd, 1858, when Mr. Samuel Beale, of Birmingham, was elected Chairman of the Company.

To mark their high appreciation of the services of Mr. Ellis the shareholders voted a sum of one thousand guineas, part of which they expended in a service of presentation plate, and also the splendid portrait of Mr. Ellis, who is portrayed standing near to the Glenfield Tunnel on the Swannington Railway, which picture is now preserved in the shareholders' room. His busy and useful life terminated on October 26th, 1862.

One part of the original South Midland scheme of 1846 was the making of a branch railway from Kettering to Huntingdon with a view to joining the Eastern Counties Railway; but this having lapsed and not being included in the Midland Act of 1853, it was left "open territory" till years after, when a private company undertook the work.

The Kettering, Thrapston, and Huntingdon Railway Company constructed under an Act of 1862 a line 26 miles in length, commencing at the Kettering Junction with the Midland main line and extending to Thrapston, and thence to its termination in junction with the Great Eastern Company's system at Huntingdon, over which latter line it had running powers to Cambridge. By agreement it was arranged that the Midland should work the new line, and by this means direct communication was obtained between Cambridge and all parts of the Midland system. This important link was opened for goods traffic on February 21st, 1866, and for passenger traffic on March 1st of the same year, when Midland passenger trains commenced to run between Kettering and Cambridge.

This railway passes through valuable beds of ironstone, which provide a considerable traffic. The Kettering, Thrapston, and Huntingdon Company finally terminated its existence on August 6th, 1897, when the Act was passed to vest the undertaking in the Midland Company.

The town of Northampton, from the time when the Midland Counties Railway was made, desired to be placed in communication with the Midland system, and a good chance presented itself when the London and North Western Company informed the Midland that it would, under the common law right, run over the Midland rails from Wichnor Junction, of the South Staffordshire Railway, and Burton-upon-Trent. The Midland simply replied that it would claim a similar right and run over the North Western Railway between Wellingborough and Northampton. A local railway company also obtained powers on July 5th, 1865, to construct a railway direct from Northampton to join the Midland main line at Oakley Junction, north of Bedford. This railway was opened on June 10th, 1872, being worked by the Midland Company. Finally, on December 31st, 1885, the Bedford and

Northampton Company ceased to exist, its railway having at that date become the property of the Midland.

At Ravenstone Wood Junction, situated about fourteen miles from Bedford, on the Northampton branch, communication is made with the East and West Junction Company's line, which in its turn works the Evesham, Redditch, and Stratford-upon-Avon Junction Railway, which was opened on June 2nd, 1879, from Stratford to Broom Junction, where it joins the Evesham and Redditch line; and in connection with the Barnt Green and Redditch system (both of which have been acquired by the Midland), in addition to the Evesham and Ashchurch branch constructed by the Midland Company, forms an alternative route between London, Bedford, and the Midland Company's western lines.

Unfortunately, the through communication between Ravenstone Wood and Broom has not been developed as it might have been, owing to the fact that the affairs of the East and West Junction Company are in the unhappy position of being under the supervision of the Court of Chancery, which appoints directors (one being a representative of the creditors), managers, and receivers of the undertaking.

The Hemel Hempsted Railway Company, in 1863 and by subsequent Acts, obtained powers to construct a local line, commencing at Boxmoor, on the London and North Western, and extending past Hemel Hempsted and Redbourn to Harpenden, on the Midland, and also to the Great Northern system at the same place. The prospects of this little line were far from satisfactory, and the promoters found that their scheme could not be of any value unless worked by one of the large companies. They therefore approached the Midland Company, and on July 16th, 1877, the line from the junction near Harpenden to Hemel Hempsted was opened for traffic, the railway being worked by the Midland Company, the communication between Boxmoor and Hemel Hempsted remaining unopened.

In 1886 the small company was dissolved, and the Hemel Hempsted line became the property of the Midland Company.

CHAPTER XIX.

HOW THE MIDLAND ENTERED MANCHESTER

AT various times extending over many years the administrators of the Midland had sought to obtain communication from Ambergate to Manchester, but however much they longed for this, the nature of the intervening ground—the rocks, the severe gradients, and the Peak of Derbyshire—formed a well-nigh insuperable barrier. It required a man of great determination and of great engineering ability to force a passage through these fastnesses, and that man was Mr. Allport.

Mr. Allport, having been General Manager of the Manchester, Sheffield, and Lincolnshire Railway, was in the best position to know the great value of Manchester and its traffic, and he had no difficulty in convincing the Midland Board that they must, at any cost, find access to Manchester. He was also aware of the difficulties of the task by a consideration of what others had tried to do and had failed.

Jessop, the great canal engineer, had set out to make a canal from the Cromford Canal to Whaley Bridge, where it would join another canal near Manchester; but the great number of locks required, together with the want of water in the summer time with which to work them, put an end to his enterprise.

After this he fell back upon a railway from Cromford to Whaley, which he constructed, and is known as the High Peak Railway, and it is one of the oldest lines in the kingdom. But what sort of a line was it? It went up and down just as the land lay; it had gradients as steep as the roof of a house, which were worked by fixed engines and ropes, and was altogether unsuited for speedy traffic.

The owners of the Manchester and Crewe line at this time were seeking other communication south just as the Midland were desirous of securing communication north, and therefore they jointly agreed that a line was necessary to connect the two systems together by means of lines from its Stockport Station to the Midland system at Ambergate. The Manchester and Crewe line, with this object in view, secured the

High Peak line, so that they had—with the exception of a short connecting link—railway communication, of a sort, from Manchester to Cromford. Both companies also favoured the construction of a connecting line from Cromford to Ambergate, which would, of course, establish rail communication throughout, but it would have required an enormous expenditure in improving the gradients and working of the High Peak line to make it anything like a success. This scheme for the construction of a line from Ambergate to Cromford, and the improvement of the High Peak road, or alternatively the formation of a new route to Manchester *viâ* Matlock and Buxton, was too great for either company or both combined to carry out.

The result was that both companies became parties to the formation of an independent company to carry out the work. This company was named the Manchester, Buxton, Matlock, and Midlands Junction Railway. There was a Board of twelve directors, which included the Midland Chairman and Vice-Chairman and also representatives of the Manchester and Crewe line, the Chairman being the Hon. G. H. Cavendish, M.P., who represented the Duke of Devonshire and the local interest. This company was incorporated on July 16th, 1846, and the Midland and the owners of the Manchester and Crewe line both subscribed largely to the undertaking.

But suddenly there was a great change of policy on the part of the owners of the Manchester and Crewe line, for on the very day that the new company came into legal existence the Manchester and Crewe line amalgamated with the London and Birmingham and the Grand Junction Railway, the three companies becoming incorporated as the London and North Western Railway Company.

So that at one stroke the Midland way to Manchester was barred, for not only did this change of policy interfere with the Midland aspirations, but it handed over the line from Manchester *viâ* the High Peak to Cromford to their London and North Western rivals.

The London and North Western, who had, of course, taken over the financial interest of the Manchester and Crewe line in the new scheme, Ambergate to Manchester *viâ* Matlock, now wanted nothing to be done. The Midland, on the other hand, who had subscribed £285,000, wanted the undertaking to proceed according to the original design, which was to construct a line 45 miles 1 furlong 6 chains, extending from Ambergate *viâ* Matlock, giving communication with Manchester.

George Stephenson, who had planned the line, was to be the engineer. The sum to be raised by shares was £1,650,000 and by loan or mortgage £550,000.

The main line was to have a length of 42 miles 2 furlongs, com-

mening with a junction with the Manchester and Crewe line at Stockport, passing through the valleys of the Wye and the Derwent and through the towns of Ashford, Bakewell, Chatsworth, Matlock, and Cromford, and terminating in a junction with the Midland Railway at Ambergate. It also had branches to Norbury Collieries and to Chapel-en-le-Frith. The steepest gradient was 1 in 100, the smallest radius of curve 16 chains; it had fifteen tunnels, with a total length of 11,574 yards.

All this grand scheme, which received the Royal Assent on July 16th, 1846, and which promised such great things for the Midland, was suddenly dashed to the ground; and instead of this great through



AMBERGATE JUNCTION.

line only a little bit of local railway extending from Ambergate to Matlock and Rowsley, about 11 miles in length, was constructed.

This greatly reduced line was made, and opened for traffic on Monday, June 4th, 1849, the Midland Company having agreed to work the line and provide the whole of the plant on equitable terms. This state of things continued until this very much shrunken Company, which we will now refer to as the "Little" Matlock Company, obtained in 1851 possession of the Cromford Canal; and in the following year (1852) the Ambergate to Rowsley line and its canals were leased to the London and North Western and the Midland Companies jointly for nineteen years from July 1st, 1852.

This lease would have terminated in 1871, and in 1853, when Mr. James Allport became General Manager of the Midland, he expressed his opinion that the Matlock line should be extended in accordance

with its name; in fact, that it should become a real Manchester, Buxton, Matlock, and Midlands Junction Railway. In other words, that the grand original scheme should be carried out. There was, however, the great difficulty that the London and North Western had the joint lease of the Ambergate and Rowsley portion until 1871, and in view of the termination of the lease, Mr. Allport had to carefully consider the Midland position in case the Midland should lose the use of the line after 1871; and this was the reason why he devised the alternative Duffield, Wirksworth, and Rowsley scheme, which would have placed the Midland in a perfectly independent position.



WILLERSLEY CUTTING, MATLOCK, IN WINTER TIME.

The interests of the two leasing companies were thus opposed to each other, and it cannot be a matter of surprise that the London and North Western Company declined with thanks the suggestion that it should find a portion of the capital to extend the line to Manchester, the sole object of which extension would be to bring the competition of the Midland into that city.

This refusal immediately caused Mr. Allport and the Midland Board to decide that they must make a line of their own from the Duffield Junction to Manchester. However, it was thought better to make two bites at this cherry, by at first only going from Rowsley as far as Buxton. The London and North Western on the one side, and

the Great Northern and the Manchester, Sheffield, and Lincolnshire railways on the other, naturally viewed with alarm the prospect of a third or middle course between London and Manchester. They entered into "arrangements"—"three-company agreements"—and mutual understandings between themselves with the sole object of keeping the Midland away from Manchester.

However, in spite of all these devices the Midland Company obtained its Act on May 25th, 1860, to construct an extension fifteen miles long from Rowsley to Buxton. The tunnels and other engineering works on this section were unusually heavy owing to the hilly



MILLER'S DALE.

nature of the ground. The views, however, to be obtained from the carriage windows in the district of Chatsworth Park, Haddon Hall, Monsal Dale, and Miller's Dale are most picturesque, and indeed the whole district may be regarded as the "Switzerland of England."

The London and North Western Company constructed a line from Whaley Bridge to Buxton, in order to occupy the country through which the Midland desired to traverse on its way to Manchester, but the gradients were so very severe that it was useless as a through route.

The Midland Company, however, was determined that this local line must not stand in the way of its own through communication with



MILLER'S DALE VIADUCT.

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ABSTRACT

Manchester, and in 1861 the Chairman, Deputy-Chairman, and General Manager drove over the route from Buxton.

On the way, by accident, they met officials of the Manchester, Sheffield, and Lincolnshire Railway, and it was arranged that the Midland Company should make an extension from near Buxton to New Mills, and thence use the Sheffield Company's line to the London Road Station, Manchester. The Bill promoted in Parliament by the Midland in 1862 to carry out the above arrangement brought forth the strong opposition of the North Western and Great Northern Companies.

Finding, however, that the Bill would probably pass, the North Western Company offered the use of their Buxton and Stockport route, but as the gradients were so extremely severe as to render it useless as a main line, the Midland would not accept such an offer, and the Act for making the line to New Mills and with running powers to Manchester received the Royal Assent in June, 1862.

But the construction of this connecting link from Buxton to New Mills in the wildest portion of the Peak district proved a very tedious and trying engineering work, which was beset with difficulties of exceptional magnitude. The gradients throughout were of the severest character, 1 in 90 being the rule. At the summit of the Peak Forest Bank, Dove Hole's Tunnel, 2,987 yards in length, had to be constructed, and in piercing the mountain natural difficulties were encountered of no ordinary character. Whilst surveying the line it was found that a large brook disappeared in what was known as the Swallow Hole—a large natural fissure. This was only one of many similar fissures and caverns, some of which were of great depth. An exploration of one of these led to the discovery that a vast volume of water was flowing.

This demonstrated that the conditions under which the tunnel could be constructed were practically unknown, and contractors therefore naturally declined to undertake the work except on very unusual terms. In the end the Company was practically compelled to construct the tunnel itself, Mr. James Campbell being appointed resident engineer under Mr. Barlow, the Company's engineer. It appeared to the engineers that the first and most essential thing to be done was to effectively divert this underground brook, which was done by cutting a channel two miles long, at the end of which was another great natural fissure into which the water was turned. From this fissure, near the Peak Forest Station, there is another underground outlet down the Great Rocks Dale, and this has been the course of the brook ever since. Great quantities of water had further to be specially

dealt with in the boring of the tunnel, but these difficulties were ultimately overcome most successfully after three years' continuous operations, and the work, when completed, proved to be of the most substantial character. At the northern end of the tunnel, a deep cutting through beds of shale, a slip occurred, bringing down a large mass of débris, which filled up the cutting and buried fourteen wagons. To prevent any recurrence it was decided to extend the tunnel through this difficult part of the strata by solid masonry.

The line was completed, and opened for goods traffic in 1866, but in the autumn of that year, after a period of exceptionally heavy rainfall all over the country, there were signs of an extensive land movement at Bugsworth Viaduct, a solid structure of masonry of five arches, the whole having a curve towards the hillside. The great saturation of the shale beds had caused them to slip on some harder



A MODERN DINING CARRIAGE.

rocks underneath, and it was observed that the whole hillside was moving, and that the curved viaduct had been forced by the immense moving mass into a straight line. Traffic was at once suspended, and the responsible engineers anxiously waited for the completion of this great earth movement. At length no less than sixteen acres of land slid bodily down the slope, carrying with it the whole of the substantial viaduct. Tunnels were formed by the engineers to divert the water underground, and four hundred men were engaged day and night for a period of ten weeks constructing a new viaduct of timber to replace the one which had been swept out of the course of the line. This work having been successfully carried out, the Midland route to Manchester was at length opened for passenger traffic in February, 1867.

For passengers the Midland Company used the London Road Station at Manchester, but for their extensive goods traffic they purchased Ancoats Hall and grounds, upon which they constructed



ASHWOOD DALE AND THE BUXTON EXPRESS.

TO VINU
ABSORBED

an extensive goods station and sidings for mineral traffic, the whole covering an area of over seventy acres. In order to gain access to the site a junction was formed with the Sheffield Company's system at Ashburys.

On October 1st, 1867, the Duffield and Wirksworth branch was opened. It was intended to form an important part of an alternative route between Derby and Rowsley, in case the property of the Matlock Company by any means should become an obstruction to the Midland communication with its own railway at Rowsley, and the line, therefore, may be regarded as one for the protection of important interests.



INTERIOR, THIRD-CLASS DINING CARRIAGE

However, at the termination of the joint lease in 1871, the Midland Company, in accordance with previous arrangements confirmed by Act of Parliament on June 26th, 1870, obtained sole possession of the Matlock Company from July 1st, 1871. The conditions were mainly that the shareholders got 5 per cent. in perpetuity.

Thus the Midland then got absolute ownership of the Ambergate and Rowsley Railway and the Cromford Canal, and the Wirksworth and Rowsley extension was rendered unnecessary.

The London and North Western Company and the Lancashire and Yorkshire Company practically held the monopoly of the very extensive and valuable traffic, both goods and passenger, to and from Liverpool,

and naturally the Midland, the Manchester, Sheffield, and Lincolnshire and Great Northern Companies were exceedingly desirous of obtaining access to this great seaport. Careful consideration showed that the construction of three new lines to Liverpool was out of the question, and it was therefore decided to form a joint committee of the three companies under the title of the Cheshire Lines. A number of small separate undertakings already existed in the districts to be traversed, and on July 5th, 1865, action was initiated by which ultimately, on August 15th, 1867, the three companies obtained an Act acquiring all these subsidiary lines, which are amalgamated in an independent committee, and also powers for constructing all the necessary links for giving through access to Liverpool. There are no personal shareholders, the capital being furnished *pro rata* by each of the three companies whose delegates form the committee—three from each line. The total length of these lines thus acquired was fifty-one miles, and the companies thus embodied in the triple control are as follows:—

	Miles.
Stockport to Woodley	2½
Stockport to Altrincham	9
Altrincham to Northwich	12½
Northwich to Helsby, with branches	22½
Garston to Liverpool (Brunswick Station)	4
Total	51

Subsequently the Cheshire Lines Committee constructed lines and works which give a total length of 123½ miles and furnish direct communication from Liverpool Central to Manchester Central, Altrincham to Chester, Glazebrook to Stockport, continuing to Godley, where it terminates by a junction with the Great Central Company's system.

By means of the Liverpool north extension and the Southport and Cheshire Lines extension the Midland is enabled to send its carriages through to Lord Street Station, Southport.

The Midland Company forms its connection with the Cheshire Lines at Bradbury Junction, near Stockport.

The carriages used on the Cheshire Lines are provided by the Joint Committee; the engine power, however, by arrangement, is supplied by the Great Central Company, but the Midland Company works its own engines and trains through to Manchester and Liverpool.

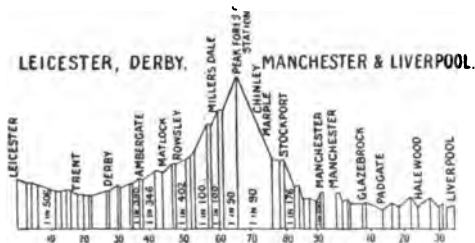
As previously mentioned, the Midland main line passenger traffic was in February, 1867, conveyed to the London Road Station, Manchester, but on Monday, August 2nd, 1880, the Midland changed its quarters to the Cheshire Lines new "Central" Station, which it reaches *via* Stockport and the Manchester South District Railway. Quite

recently (March 15th, 1899) the Great Northern Company began also to run its own trains into the Central Station at Manchester.

A new railway is now under construction by the Midland Company from its own line at New Mills to Heaton Mersey, and its Manchester South District Railway, which will greatly improve the Midland approach to Manchester Central, as it will avoid the express trains having to run *via* Marple, as at present.



INTERIOR, LIVERPOOL CENTRAL STATION.



CONTOUR OF RAILWAY FROM LEICESTER TO DERBY, MANCHESTER, AND LIVERPOOL.

CHAPTER XX.

BEDFORD TO LONDON

ALTHOUGH in possession of running powers to London, the development of the Midland system and its growing traffic speedily demonstrated that something of a more permanent and satisfactory character, with greater control in the hands of the Midland, must, in the supreme interests of the Company and the districts which it served, be secured.

“Running powers,” although very much in evidence and very extensively used, are nevertheless more or less illusory. These running powers are generally given by one company to prevent another company laying a competing line, and they grant the concession because they are practically compelled to do so; but the company granting the favour are still left in a position to cause delays and inconvenience at every turn, and to trifle with the company exercising the privilege to an almost unlimited extent. In fact, running powers may in brief be said to confer the minimum of accommodation with the maximum of inconvenience; and when the company working under them can stand such a condition of affairs no longer, they have to fall back upon the only alternative of constructing a line for themselves.

Such in brief was the experience of working Midland traffic to London *via* Hitchin.

Soon after the Midland commenced to run its own passenger trains over the Great Northern system from Hitchin to London (1858) it became apparent that history would repeat itself, and that which had happened on the London and North Western route to Euston *via* Rugby would be repeated on the route to King's Cross *via* Hitchin.

The traffic had been gradually increasing to such an extent that the lines south of Hitchin were unable to carry it efficiently.

The Great Northern Company, as owners, naturally gave their own trains the preference, and consequently Midland traffic had to take second place, with all the consequences of very irritating delays,

brought about by Midland expresses having to follow immediately after Great Northern slow stopping trains.

So serious did this become that the already great difficulties were vastly intensified by the enormous strain upon the railway companies owing to the exceptional traffic brought about by the Great Exhibition of 1862. In this year no fewer than 3,400 Midland trains—1,000 passenger and 2,400 goods—were delayed on the Great Northern system.

This circumstance alone was enough to demonstrate to the Midland Company the absolute necessity for an independent route to London. But more serious troubles were yet in store for them. From 1858 to 1862 the Midland had enjoyed the use, under agreement, of Great Northern sidings at King's Cross, although they were actively providing sidings of their own to meet the requirements of their increasing traffic. The Great Northern, too, were likewise under pressure and suffered from inadequate siding accommodation for their Exhibition trains, and so they determined to "evict" the Midland from the sidings on June 30th, 1862, a process which was carried out in a summary fashion, thereby for a time completely dislocating the Midland traffic. This was the last straw, and the great chief, Mr. James Allport, and the Midland Board determined, in the interests of the shareholders, to put an end to what had become an utterly intolerable position.

An independent main line, commencing at Bedford and proceeding *viâ* Luton, St. Albans, and Hendon to a new terminus at St. Pancras, was surveyed, and a Bill authorising its construction at once prepared. This Bill raised some opposition, but the Midland established such an overpowering case that on June 22nd, 1863, parliamentary sanction was given to construct the necessary fifty miles of line to give an independent access to London. The capital raised for this purpose was £1,750,000 in shares and £583,330 on loan. Commencing at the northern end of Bedford Station, the engineering difficulties were not of an exceptional character. The Ouse is crossed by a girder bridge, Ampthill is tunnelled, and the summit level is reached near to Leagrave, and a slight decline brings the railway to Luton. The line to St. Albans is an easy gradient at a high elevation, and passing through Elstree Tunnel, 1,060 yards, Hendon is soon reached; but the engineering difficulties on entering the London district were very serious and involved an enormous outlay of capital.

By a very wise and far-seeing policy, the Midland Company decided that as the London traffic was certain to grow by leaps and bounds, the time must soon come when two sets of rails would not be able to carry the passenger and mineral traffic; they must purchase land

sufficiently wide for the laying down at a future date of four sets of rails complete. Not only was this done, but the whole of the over-bridges from Bedford to London were constructed for four lines, while from the Welsh Harp Junction to St. Pancras goods station the four lines were laid down at once. At Belsize Tunnel, however, there was a curious device designed to carry four sets of rails in the space necessary for two, and at the same time avoid the necessity of having junctions at either end of the tunnel. This was accomplished in this way—the four sets of lines were laid down within a few inches of each other and intersected each other through the tunnel. This tunnel is 1 mile 62 yards in length, and is about 120 feet below the surface. This system remained in use until February 3rd, 1884, when the second Belsize Tunnel, which the increasing traffic and the difficulties and complications in working the old one had rendered absolutely necessary, was formally opened.

On entering the London district at Hendon, the difficulties of the distribution of traffic begin to manifest themselves. Practically up to this point the trains from the north arrive with heavy loads of passengers and merchandise—meat, fish, vegetables, milk, timber, coal, and general goods—and all of these have to be assorted and distributed according to their destination in London; and in the case of through traffic to foreign parts for their transhipment to other companies and steamships. In addition to all these, there is all the return flow of traffic in the opposite direction and from all parts of the world to be provided for as regards its collection for distribution at other centres on the Midland system.

Following up the main line to its great London terminus, we pass the junction station at Kentish Town, which supplies communication between the Midland, the London, Tilbury, and Southend, the Great Eastern, the London, Chatham, and Dover, the Metropolitan, and other railway systems.

But the difficulties of selecting and determining on the best available site for the vast assemblage of lines and buildings necessary for the great London terminus were very considerable. As previously pointed out, the Midland Company had its own goods station at St. Pancras, communicating with the Great Northern system. This was very much overcrowded with the rapidly growing goods traffic. Its situation was unsuited to the addition of a vast passenger traffic, and an entirely new site therefore became imperatively necessary. At this period an estate adjoining the Euston Road came upon the market, which, if acquired, would give an equally good position for traffic as that possessed by the Great Northern and the London and North Western railways. The

directors, after being fully satisfied as to the advantages of this site, immediately secured it on very favourable terms, and there the present magnificent pile of buildings known as St. Pancras Station now stand. To reach this site by good gradients it was necessary to cross the Regent's Canal, which barred the approach on the level and necessitated one of two things. If the lines went under the canal the station buildings and the rail level at St. Pancras would have been buried underground; while if the lines went over the canal the station level must be raised from 12 to 17 feet above the street level of Euston Road. The Regent's Canal was only 45 chains north of the terminus, and practically determined the level of the station. It was at once decided that the high level be adopted, as it carried with it many compensating advantages. The high level practically gave the whole of the ground-floor area for disposal, and although the original design was to fill this up with the material excavated from the St. Pancras branch, further considerations demonstrated the enormous value of this ground space for warehouse accommodation in the Metropolis. The site was bounded on the east by the old St. Pancras Road, on the south by Euston Road, and on the west by Brewer Street, and hence with direct access to these streets it was decided that this lower or ground floor should be devoted in its entirety to warehouse purposes. The enormous traffic in beer between Burton-on-Trent and London over the Midland system demanded large cellars for storing and distribution; and here was offered every facility for dealing with it in the best manner possible, as regards temperature, situation, and practically unlimited accommodation. Another great factor was, of course, that by making such ample provision for the beer trade of Burton-on-Trent, traffic of this and a similar character could not fail to be attracted to the Midland system and prove a very valuable source of revenue to the Company and a great convenience to the brewers and their customers in London and the district.

The beer traffic also had a determining influence in the final character of the ground floor. Brick piers and arches, which appeared in the early designs, would have occupied far too much space, and so they gave way to iron columns and girders, and upon these the main floors of St. Pancras passenger station rest. It having been determined that the ground floor should be vast brewery stores, the engineer of the Midland determined that everything should be expressly designed and constructed for that purpose; hence, as he afterwards stated, a beer barrel became the unit of measure upon which all the arrangements of this floor were based.

This decision led to a reconsideration of the question of the

roofing of the station, and demonstrated the great value, if it could be accomplished at a reasonable outlay, of making the roof of one vast arch. It had been pointed out by Mr. Allport, the General Manager, to the directors that railway stations were frequently designed with either intermediate columns or brick walls, varying in the number of spans from one to six, and that in the course of a few years it often happened that such stations had to be remodelled. Platforms were required where lines were laid, and rails where there were platforms, and then came the difficulty how to accomplish the change desired and demanded by the traffic without entirely reconstructing the station. It was consequently impressed upon the mind of Mr. W. H. Barlow, the Engineer, the extreme desirability of having the station as free as possible from columns or brick walls, and so Mr. Barlow faced the problem and tried to construct the roof in one span. This also involved another engineering point, namely, that as the platforms and rails were to be movable in case of necessity, it followed that the strength of the flooring must be uniform throughout, so as to be able to carry any weight which the traffic might require.

The question of roofing the cellars of such uniform strength proved the crux of the whole question. In the early suggested designs evolved by the engineer it became obvious that if intermediate columns were employed to support the outside roofing of the station proper, these must be carried down through the station floor and through the beer cellars to a solid foundation. These intermediate pillars, upon which were to rest the spans of the several bays into which it was proposed to construct the roof, would consequently have been over sixty feet in length and of much larger diameter than the other columns under the station, which other columns would only have to carry the weight of the station floor and none of the weight of the roof. This would have necessitated the employment of different patterns in the girders, cross-girders, and in the plating of the lower floor, besides interfering with the economical distribution of the space on the ground floor. Moreover, these columns must have carried large areas of roofing in addition to the weight of the flooring, involving a greatly increased weight on the foundations, which must have been enlarged accordingly. Further than that, there was the additional difficulty, which had to be carefully weighed, that some of these pillars must have rested on the tunnel of the Midland Company's branch railway, which extends from near Camden Road to the junction at King's Cross with the Metropolitan underground system. This tunnel passes diagonally underneath St. Pancras Station, from the north-west corner to the south-east corner, so that here the engineer had to deal with a foundation already under-

mined by a railway over which he had to construct vast sets of rails in the beer stores on the ground level, an enormous railway terminus at a high level over it, and enveloping and inclosing the whole with a vast roof of enormous weight.

The consideration of all these complex questions and problems led to the conception in the mind of the engineer that by far the best course to pursue would be to construct one great span of 240 feet wide, with a height at the highest point of 100 feet above the rails, the whole length of the roof being 690 feet. The estimated addition to the cost of principals of 240 feet span as compared with principals of two spans of 120 feet each and their columns was about £6,000. But notwithstanding this, the importance attached by the directors and the General Manager to obtaining perfect freedom in the use of the whole area of the station for traffic purposes, unembarrassed by columns or other impediments, was such that instructions were given for an arched roof of one clear span.

The question which the engineer had to determine was, what depth and form of rib, and what additional material would be employed to make an arch sufficient to retain its form under all conditions of stress arising from its own weight, from snow, and from heavy gales of wind. The results at which Mr. Barlow arrived on the subject, partly by calculation and partly by experiment, were:—

1. That the depth of the rib must be sufficient to contain all the lines of pressure generated by the dead load, by snow, and by the pressure of the wind.
2. That the sectional area of the metal should be sufficient to sustain the whole stress without producing a strain on the iron exceeding $3\frac{1}{2}$ tons per square inch.
3. That the arch should be rivetted together with proper joint-plates throughout, so as to give it the advantages of complete continuity.

The floor girders across formed a ready-made tie sufficient for an arched roof over the station in one span, all that was to be required to obtain a roof of this construction being the arch or upper member of the truss, of which the floor girders would form the lower member. There was a third feature in the case. In iron roofs, as usually constructed, the depth of one principal is about one-fifth of the span; but here, by adopting an arch extending across the station, the height from the tie beneath the rails to the crown of the arch became the effective depth of the truss; and this height, being about two-fifths of the span, all the horizontal strain arising from the dead weight of the roof, its covering, and accumulations of snow, etc., would be about the same in

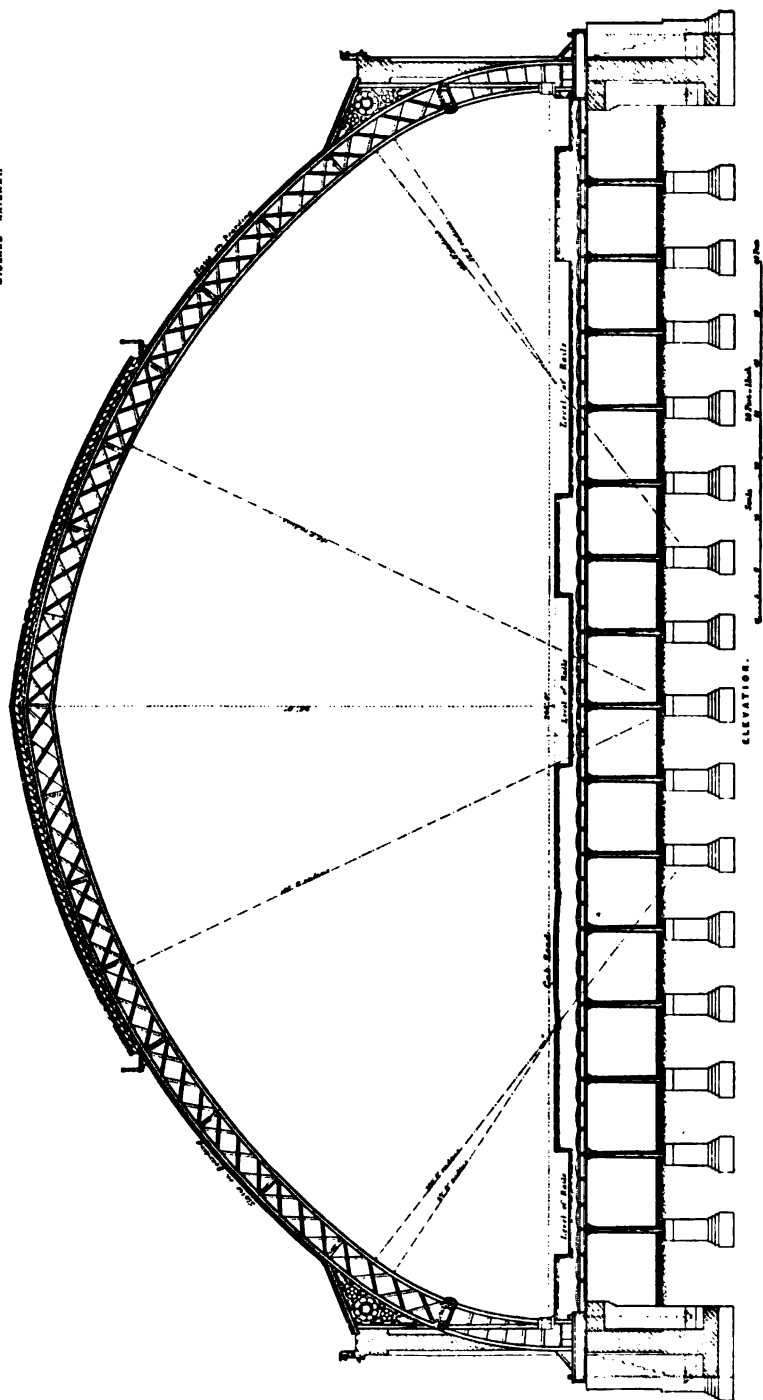
the arch of 240 feet span with an effective depth of truss of 100 feet as in an ordinary truss of 120 feet span with a depth of 24 feet. Excepting, therefore, such additions as might be necessary for retaining the form and figure of the arch, the actual sectional area at the crown and for about two-thirds of the entire arch did not require to be greater than in an ordinary truss of 120 feet span. There were, as Mr. Barlow pointed out, other advantages belonging to the arch—one being that as the weight of the roof was carried to the floor line and did not rest on the tops of the walls, there was no necessity to make the side walls thicker; for not only was the weight on the tops of the walls avoided, but also the racking motion from the expansion and contraction of an ordinary roof, which, though it might be mitigated, was not prevented by the use of roller frames at the feet of the principals and by appliances of a like nature. As to the question of the contraction and expansion of the arched roof, the ties being beneath the ballast, the temperature would vary so little that no provision would be necessary, and for the arched part of the roof, which would alone be subject to appreciable change, the only effect would be a slight rise or fall of the crown.

The general arrangements of the platforms and rails of the passenger station are shown in the diagram of Mr. Barlow, which is reproduced. There is nothing calling for special observation beyond recording the fact that there are three levels of rails one above the other, as has already been pointed out. On the lowest, or underground level, the Midland Company also constructed a tunnel for the use of the Metropolitan Company, in view of the possible widening at some future date of that Company's system.

The area of the passenger station at St. Pancras, measured within the walls, is 18,822 square yards. The lower floor contains 720 cast-iron columns, set with stone bases in brick piers; there are 49 rows of principal girders across the station, and 15 similar girders running longitudinally. These carry intermediate girders, and the whole is covered with Mallet's buckle-plates. The strength of the girders and plating is sufficient to carry locomotives all over the floor, the ironwork of which cost £57,000, or about £3 os. 6d. per square yard.

The main ribs or principals of the roof are made of channel iron and plate iron, and are 6 feet deep, or one-fortieth of the clear span. The rib between the walls is open work, but the extremities of the principals in the walls are of solid plates. The total weight of each rib is 54 tons 16 cwt., and the cost £1,132 4s. each. The ribs project in front of the piers of the walls, and the piers project from the line of wall. The width measured between the walls is 245 feet 6 inches, and the distance from centre to centre of the ribs is

THE ST PANCRAS STATION.
MIDLAND RAILWAY.



DETAILS OF FOUNDATION AND ROOF.

29 feet 4 inches. The arch is slightly pointed at the crown, as this form apparently possesses some advantages in resisting the lateral pressure of the wind, while it improves the architectural effect. The radius of curvature was diminished at the haunches to give increased head room near the walls. The glazing is ridge and furrow, and ventilation is obtained along the whole length of each ridge, which is left open and protected from wet by a ventilation cover. The ventilation is thus very complete. The roof is also provided with gangways throughout, so that any pane of glass can be taken out and replaced. The gable ends or screens consist of three horizontal lattice girders 6 feet wide, united and carried by verticals of similar construction.

The erection of the roof was effected by means of two large timber stages, each made in three divisions, so that each part of either stage could be moved separately. These stages were designed by the Butterley Iron Company, who were the contractors for the roofing and for the lower floor, Sir G. J. N. Alleyne being the manager. The stages were 40 feet in width, of great strength and solidity, and contained about 25,000 cubic feet of timber and 80 tons of ironwork. The weight of each stage was about 580 tons, and with two ribs on it, the weight resting on the floor girders where it stood, including men and apparatus, was about 650 tons. The passage of these two stages, which moved on wheels along the floor of the building, constituted a good test of the strength of that portion of the work.

The process of erection was somewhat complicated on account of the very heavy weights which had to be dealt with. The contract provided for the formal testing of the roof, but the not inconsiderable tests to which it was subjected from time to time during erection were sufficient to demonstrate that this was unnecessary. Heavy iron girders, weighing over seven tons each, were raised from the cross-pieces with only a depression of three-sixteenths of an inch, and after the weight was removed the ironwork at once resumed its position. During the erection the roof endured several gales of wind without the slightest visible movement; and the lines of the roof are remarkably well preserved. As to the strength of the roof there were no precedents of sufficient magnitude to be available, and at St. Pancras it was further required to construct an arch capable of maintaining its own form without any intermediate connections with the tie at the rail level. Under these circumstances it was considered expedient to adopt a low rate of pressure upon the metal, with a large assumed weight acting in addition to the weight of the principals. With this view, and to remove all doubt on the question of strength,

City of California



ST. PANCRAS HOTEL AND STATION
(Designed by Sir Gilbert Scott).

TO MY
ANGEL

the arch was designed so as to be capable of bearing an assumed load of 70 lbs. per square foot measured on the plan, in addition to the weight of the principals, with a stress on the metal not exceeding $3\frac{1}{2}$ tons per square inch. Of the 54 tons 16 cwts., the weight of a rib, a portion belongs to the connecting medium with the ties. Excluding this portion, the weight of each rib is as follows:—

	Tons.
The open arched part between the springings . . .	35
The feet or pedestals, 9 tons 10 cwts. each (2) . . .	19
	<hr/> 54
The surface carried by the arched portion of the rib is 240 feet \times 29 feet 4 inches = 7,040 square feet; and with the assumed weight of 70 lbs. per foot, the assumed load is 7,040 \times 70 lbs.	220
Add weight of arch	35
	<hr/> 255

The great stiffness and almost total absence of deflection or disturbance of any kind which the roof exhibits point irresistibly to the conclusion that the structure is of great strength.

The roof as originally designed had twenty-four main ribs, and the gable or screen at the northern end; and Sir Gilbert Scott designed a second gable and screen for the southern end, so as to separate the passenger station from the hotel buildings. This second screen involved an additional main rib. The total cost of the roof, including the two screens, amounted to £69,365.

The area of space within the walls on the ground being 245 feet 6 inches wide and 690 feet long, it follows that the extent of the floor to be covered is 169,400 feet, and the cost for covering, excluding the cost of the screens and the extra rib at the south screen, works out at £31 11s. per square of 100 feet superficial. The cost of the floor girders, which perform the double duty of girders and roof-ties, is taken as part of the cost of the floor. If there had been no floor-girders, the quantity of metal required for ties at that level would have made an addition of about £1 per square of 100 feet superficial to the cost of the roof.

The roof is not more costly than those of other railway stations; it possesses a unique character of its own, has many advantages, and forms a most worthy engineering work at this important London terminus. The greatest credit is due to Mr. William Henry Barlow, the Engineer of the Midland Company, who designed the structure, of whose skill it will form a lasting and worthy memorial. The whole of the ironwork was executed by the Butterley Iron Company.

The Bedford and London extension was not all opened at one time, for before the stations were completed, and indeed as soon as a pair of rails was available, coal was conveyed locally to the town to which the line then extended.

The line to St. Pancras goods station was opened on September 7th, 1867. Local passenger traffic from Bedford to Moorgate Street commenced on July 13th, 1868. At that time the locomotives which had worked the trains up to Kentish Town were uncoupled at that station, and the trains taken forward by the new Midland condensing tank engines *viâ* St. Paul's Road Junction, King's Cross Junction (underground), the termination of the Midland system, and then forward over the Metropolitan Railway to Moorgate Street.

Finally, on October 1st, 1868, the St. Pancras Station was opened for passenger traffic, and during the night the whole of the Midland staff, tickets, carriages, and property of the Midland was transferred from King's Cross to St. Pancras.

The first train to enter the new terminus was the up mail from Leeds, which arrived at 4.15 a.m. The first train to leave the new station was the newspaper express, at 6.15, for the north. The 7.45 a.m. and the 9 a.m. trains, which formerly had run from King's Cross, followed; but at ten o'clock a new express for Manchester left St. Pancras, and after stopping at Kentish Town left that station at 10.6 and ran straight through to Leicester, a distance of $97\frac{1}{2}$ miles, in 2 hours 8 minutes, arriving at 12.14 p.m. At this period this was a wonderful run, and constituted a world's record. This performance was repeated four times a day, namely, by the 5 p.m. down and the two expresses to London leaving Leicester at 12.29 and 7.34 p.m.

Thenceforward the Bedford and Hitchin line was an unimportant branch.

CHAPTER XXI.

THE LONDON DISTRICT AND A WAR OF RATES TO LONDON

AT Brent and West End enormous siding accommodation has been provided for the great concentration of the coal and goods traffic, and adjoining these, at Child's Hill, are extensive engine sheds, which accommodate the tank locomotives which are engaged in conveying the traffic to all the various depôts in the London district and to the junctions with other railway systems. Brent and West End sidings constitute a vast marshalling and distributing ground, where the traffic for the London district is made up into trainloads for its particular destination, and where the return traffic and empty wagons are concentrated before being despatched to the north.

The first branch line to diverge from the main route runs from Brent and Child's Hill junctions to Acton, and was originally constructed by the Midland and South Western Junction Railway Company by virtue of an Act passed in 1864. This short line, four miles in length, was from the opening worked by the Midland Company, and in 1874 became vested in the Midland at a rental of £6,000 per annum. At Acton Wells it forms a junction with the North and South Western Junction Railway Company's system, which by an Act passed on August 14th, 1871, was jointly leased in perpetuity to the Midland, London and North Western, and North London Companies, and extends to Kew and Hammersmith.

By means of this jointly leased line the Midland obtains communication with the Great Western and London and South Western Railways, and the London and South Western Company runs its own engines and goods trains to the Midland sidings at Brent. Also, by the same route and by the use of the Metropolitan District Company's Hammersmith Junction line, the Midland obtains access to its own depôts for coal, goods, and cattle traffic at West Kensington and for coal at Kensington (High Street), which were opened on March 1st, 1878.

From Kew Junction to Clapham Junction the Midland runs its own goods and coal trains over the London and South Western rails.

Returning again to Brent and proceeding forward on the Midland main line, a junction is formed with the Metropolitan Railway at Finchley Road, and after passing through the Belsize Tunnel, there are important junctions situated at Carlton Road and Kentish Town, both of which communicate with the Tottenham and Hampstead Junction line. As early as the year 1862 an independent company was formed with the object of connecting the London and North Western Company's Hampstead line at Gospel Oak with the Great Eastern system at Tottenham, and it therefore adopted the name Tottenham and Hampstead Junction; but the little company found that the two companies which it desired to connect together had already communications and agreements, and the junction points and crossings at the Gospel Oak Station, instead of being used for traffic, were pulled up and laid in a heap by the side of the line.

However, although this railway was useless for the purpose for which it was constructed, it was afterwards made of great value as a link between the Midland and the Great Eastern Companies, by whom it is now jointly worked, and by whom the shares are largely owned.

By means of the Carlton Road and Kentish Town branches the Midland gains access to the Tottenham and Hampstead Railway, thus giving direct communication with the Great Eastern, Tottenham, and Forest Gate and London, Tilbury, and Southend Railways.

Thus, through express trains are now run from Southend to St. Pancras worked by the Tilbury Company's engines, the Great Eastern Company runs passenger trains from Tottenham, and thus that Company has the advantage of using St. Pancras Station; while, on the other hand, the Midland Company has its own goods and mineral trains working to Thames Wharf, Victoria Docks, Mint Street, West India Docks, and the whole of the great port of London *viâ* Tottenham Junction.

Thus it comes to pass that a piece of line which originally threatened to become of little value as an independent undertaking, became in the hands of the Midland and the Great Eastern Companies an invaluable connecting link. The Great Eastern Company at Liverpool Street, while being in an excellent position for traffic to the City and the east of London, were too far removed from the west of London to obtain much traffic from that district. For this purpose St. Pancras forms an excellent terminus for traffic to the north and west end of London. The London, Tilbury, and Southend Company, which previously only had communication with the east of London, by a recent arrangement uses St. Pancras as its terminus for the west end.

The Midland Railway Company as a *quid pro quo* is able to convey

passengers for Australia, per the Orient Line, from St. Pancras to Tilbury Docks, *viâ* the Tottenham, Forest Gate, and the London, Tilbury, and Southend Railways direct, thus saving passengers with their luggage the inconvenience of crossing London.

Reverting again to the main line, we have now to deal with St. Paul's Road Junction, south of Camden Road Station, where a line branches off to give communication with the Metropolitan Railway at King's Cross (underground). It should here be stated that when the Bedford to London extension was opened on July 13th, 1868, for local passenger traffic, and before St. Pancras Station was completed, the trains ran from Bedford to Moorgate Street over the Metropolitan system. At Farringdon Street an invaluable connection is made with the London, Chatham, and Dover Railway Company's system, which gives the Midland through communication with Ludgate Hill, Loughborough Junction, Clapham, and Victoria, the great West End terminus. Here at Victoria further communication is provided from the Midland system to the London and Brighton line, thus opening up the South Coast traffic directly to the Midland Railway. On July 1st, 1875, to make this connection between north and south more complete, the Midland Company commenced to run their own through passenger trains from Hendon *viâ* Kentish Town and Farringdon Street to Victoria, while on the other hand the London, Chatham, and Dover Company also worked their own engines and trains over the same route between Victoria and Hendon. Thus the Midland, by an interchange of running powers with the London, Chatham, and Dover Railway, have a very complete means for the interchange of passenger traffic both locally and for distant parts.

To supply coal to the south of London the Company has constructed depôts at Wandsworth, Brixton, Peckham, and Walworth Road, all of which are supplied by trains running direct from Child's Hill and Brent, in addition to the vast quantity of coal handed over to the southern railway companies.

As regards the goods traffic, as long ago as May 1st, 1879, the Midland began running their own goods trains from Kentish Town to London Bridge *viâ* Ludgate Hill and the Blackfriars Curve and to the South Eastern Railway's goods station at Bricklayer's Arms. This gives an outlet for the goods traffic on to the South Eastern and Brighton Companies' systems.

More recently Hither Green sidings have been opened by the extension of the Midland running powers from New Cross to this depôt. This junction is of great value and importance for the transfer of fruit and other traffic which requires to be dealt with very ex-

peditionously. During the height of the fruit season, which usually commences about the end of June, numerous special express trains are run from Herne Hill and Hither Green to Kentish Town, and then forwarded by special express trains to Leicester, Manchester, Leeds, Bradford, and Scotland. Thus the Kentish fruit growers are brought into rapid communication with the great consuming centres of the country, and the carriage of perishable goods is thereby greatly promoted. This is of vast importance, for the existence of this trade all depends upon the fruit being delivered at the consuming centres in prime condition and before it has had time to deteriorate. Special vans are provided and reserved exclusively for these express fruit trains, the running speed being equal to that of passenger trains.

On January 1st, 1878, the Midland Company opened its new Whitecross Street goods station in the very heart of the City of London. It is situated between Aldersgate and Moorgate Street stations, and is approached by means of the running powers over the Metropolitan Railway. The area of this goods station is about 4,300 square yards, the main building being 250 feet long by 50 feet wide, and having six floors, the total height being 70 feet above the street-level.

Thirty-six iron columns, placed in two rows, support the floors, each of these columns being practically continuous from the basement to the tie-beams of the roof; all the floors are fireproof. Hoists are provided, which enable goods to be transferred to any of the floors, and railway wagons, with their load complete, can be raised from the level of the Metropolitan Railway to the first floor. Adjoining the principal warehouse is a large area of ground, covered by six bays of roofing. The roofs are of iron, supported upon columns and girders, and receive light through broad belts of glazing. This great space is for the sheltering of the carts and vans during the times of loading and unloading goods.

In the year 1863 the Midland and Great Northern Railway Companies, who had previously been engaged in a severe competition with reference to the rates of coal carriage to London, entered into an agreement by which the rates from Leicestershire, Nottinghamshire, Derbyshire, and Yorkshire were finally fixed on a fair basis. In case of a dispute, the matter, it was arranged, should be determined by arbitration. This agreement was honourably carried out until 1868, when, to the surprise of the Midland, the Great Northern Company desired an alteration, and in the following year the matter was referred to Sir John Carslake. After more than a year and a quarter had elapsed in taking evidence *pro* and *con*, he made his award in the

following words: "I award that no alteration be made in the rates for coal in the said agreement, or submission to arbitration mentioned and referred to." The award bore the date, August, 1870. The Great Northern having thus lost in the serious questions at issue, fell back upon the expedient, as expressed by Mr. Denison, one of their counsel, "to look at the agreement and see whether we could drive a coach and six through it." When legal gentlemen set their wits to work with this avowed object, it is not difficult to see that some specious scheme or device would be launched for "keeping the promise to the ear" whilst practically evading it. The *modus operandi* was as follows: The Great Northern induced the Sheffield Company to deliver Yorkshire coal to them at Retford by a circuitous route instead of by the direct line to Doncaster. The practical effect of this was that the Yorkshire coal was sent from Retford to London under the Nottinghamshire rate instead of under the higher Yorkshire rate—a difference of 11*d.* per ton. Thus the Great Northern evaded the award, and actually reduced their rate to the extent named, so that not only was the Midland affected, but a great injustice was done to the colliery owners of Derbyshire, Nottinghamshire, and Leicestershire, by giving the Yorkshire collieries an unfair advantage by having their coal carried to London—a longer distance—at the same price per ton. This, of course, aroused the Midland Company, who took action at once, and, in defence of their own and the interests of the collieries whom they served, immediately lowered their rates to a corresponding degree. Reprisals and counter reprisals followed in rapid succession, for in a war of rates, as in other wars, a spirit of recklessness and disregard of consequences is forced upon the combatants. These various movements continued, until finally both companies were in the position of carrying coal to London absolutely at a loss; for the small sums charged were quite unequal to defray the necessary working expenses. Throughout the war the Midland occupied the best position, and had this crumb of comfort, that their losses were less than those of their rivals, who had to carry the mineral a longer distance at the same price.

The total reduction on the Derbyshire rate from the beginning of the conflict amounted to 2*s.* 3*d.* per ton, making the total Clay Cross rate only 3*s.* 2*d.* per ton. Towards the close of the dispute the Midland, whose affairs had never been conducted with more conspicuous ability than at this trying period, executed a bold movement which absolutely re-established its monopoly as regards the Derbyshire traffic. Notice was given to the Great Northern, and quickly enforced, that the advantage which they had previously enjoyed of having coal from Derbyshire

conveyed to Nottingham by the Midland at the through rate to London would cease, and it would have to pay the local and much higher rate. This practically excluded the Great Northern from Derbyshire, and lost them a traffic which a short time previously had resulted in an annual return of £50,000. This was a decisive and conclusive blow as far as this matter was concerned, although ultimately it led to the extension of the Great Northern system to the Leen Valley, Derby, and Stafford, and also, in conjunction with the London and North Western, to the construction of a line from Newark to Melton Mowbray and Market Harborough, as well as an independent Great Northern branch from Tilton Junction to Leicester.

After war—peace. But it was not the peace of submission ; it was independence. Numerous conferences were held between the parties, but common action failing, the Midland took an independent course and raised their rates from May 1st, 1871.

But although the war of rates had practically ceased, the conflict was only transferred, for almost immediately many schemes were launched for the construction of new lines, involving a very large expenditure of capital.

It is necessary to explain that the Manchester, Sheffield, and Lincolnshire (now Great Central) and Great Northern Companies had entered into a fifty years' agreement, but a little green-eyed jealousy was introduced between these parties by the Sheffield Company having encouraged the Midland by allowing them access to Manchester over their rails. The Sheffield Company had also long cherished a desire for a route to London independently of its Great Northern partner. This led to a proposal and an "acceptance," in 1873, for the construction of a joint Midland and Sheffield line direct from Askern Junction, north of Doncaster, to Rushton, near Kettering, on the Midland main line, a distance of about 115 miles, and involving an expenditure of £2,700,000. Under this scheme the Sheffield Company was to have running powers over the Midland from Rushton to London, and thus the Sheffield line would have been completely independent of the Great Northern. A struggle lasting for forty days in the Commons Committee ensued, and the joint Bill emerged in a mutilated form, which mutilation was continued by the House of Lords, with the result that but a few miles of the scheme were left, and this was ultimately abandoned by both companies. And thus a death-blow was given to a project which, had it been carried through, the new Great Central extension to London would never have been constructed.

CHAPTER XXII.

IMPORTANT EXTENSIONS AND NEGOTIATIONS

THE line which George Stephenson declined to construct in 1835 from Chesterfield to Sheffield on account of its severe gradients and the limited power of the locomotives of that period, was subsequently carried out, and direct communication was established between Sheffield and the south on February 1st, 1870. Leaving the old main line at Tapton, north of Chesterfield, the new route diverges to the west and encounters very severe rising gradients. After running over Unstone Viaduct and passing Dronfield, the summit-level is reached within the Bradway Tunnel, 1 mile 264 yards long, and from thence the falling gradients are equally steep, practically all the way to Sheffield, where a new station was constructed. The new line proceeds *viâ* Attercliffe to its junction with the old Sheffield and Rotherham Railway, thus furnishing an alternative route between Chesterfield and Masborough. Thus the town of Sheffield was put on the direct line, to the great advantage of the trade of the town and the districts through which the line traverses. There was no formal ceremony at the opening, but at Dronfield there were great rejoicings and the day was observed as a public holiday.

The Midland, with a view to extending its communication from Wichnor, on its Birmingham and Derby line, to Walsall and Wolverhampton, subscribed £72,000 to two independent companies—one known as the Trent Valley, Midlands, and Grand Junction, the other the South Staffordshire Junction Railway—which received their Acts and became amalgamated in 1846 under the name of the South Staffordshire Railway Company. This amalgamated Company constructed the lines which extend from Wichnor to Walsall and Dudley, forming a junction with the Oxford, Worcester, and Wolverhampton line. The Midland obtained running powers over the whole of the South Staffordshire Railway, and this continued until 1867, when the London and North Western obtained by purchase the South Staffordshire undertaking. Then it was that the Midland deemed it wise to

obtain an independent line of its own, and the London and North Western, by an Act of 1876, sold the piece of line from Walsall Junction to Wolverhampton, and the Midland ceased to exercise running powers over the South Staffordshire Railway.

By the Act of August 6th, 1872, the Wolverhampton, Walsall, and Midland Junction Company was incorporated to make lines from Walsall, on the Wolverhampton and Walsall Railway, to join the Midland at Water Orton, but by an Act of 1874 this new undertaking was vested in the Midland. The Wolverhampton and Walsall Company was incorporated in 1865 to construct a line from Wolverhampton to Walsall. This was afterwards vested in the London and North Western, but by an Act of 1876 it was sold by the London and North Western to the Midland. At midnight on July 31st, 1876, there was a transformation scene on this line, when the whole of the London and North Western engines, vehicles, and staff withdrew, and the Midland staff took command and commenced to work all the passenger and goods trains over it on the following morning, August 1st, 1876.

The Water Orton and Walsall line was opened for goods traffic on Monday, May 19th, 1879, and for passengers on July 1st, 1879, when the Midland trains ceased to run from Wichnor Junction.

The advantage obtained was that Wolverhampton and Walsall were put into direct communication with London *via* the Midland system.

As it may seem an extraordinary circumstance that one railway company should sell a piece of line to a rival, some explanation is desirable, but it is nevertheless extremely difficult to give in an intelligible form, as it was the outcome of long negotiations over a great many most intricate questions of railway policy and construction. In fact, the whole subject forms a problem in railway negotiations affecting a large number of districts, which, opening about 1865, after lasting many years, resulted thus :—

(a) The London and North Western took over the South Leicestershire (private Company) line, Nuneaton to Wigston, and ran thence over the Midland line to Leicester, where the Midland gave them the use of their passenger station and built a goods station for their goods traffic.

(b) The Midland got running powers over the South Leicestershire line from Wigston to Nuneaton and made a line from Nuneaton to join its own system at Whitacre.

(c) The London and North Western bought the South Staffordshire line.

(d) The Midland to give up running over the South Staffordshire from Wichnor to Walsall. The Midland to make the Water Orton and Walsall line, and buy from the London and North Western the Walsall line to Wolverhampton; and the Midland to use the London and North Western station at Wolverhampton. The Midland to run to Dudley from Walsall for goods traffic, and the Midland also to run from Nuneaton to Coventry for goods traffic.

(e) The Midland made a curve south of Tamworth (three-quarters of a mile) to enable the London and North Western to run from Nuneaton to Burton; but this was never opened, as the Midland and London and North Western further agreed to construct the Ashby and Nuneaton Railway jointly, and the London and North Western got power to run to all collieries on the Leicester and Burton line for mineral traffic.

(f) The London and North Western obtained running powers from Wichnor to Derby.

(g) The Midland obtained running powers from Wellingborough to Northampton.

(h) The Midland obtained powers to run through New Street Station, Birmingham, and the London and North Western agreed to widen the lines.

(i) The Midland and London and North Western made a joint station at Market Harborough, with separate lines for each company, and the Enderby branch near Leicester was constructed jointly.

The sum total, in effect, is that the Midland got its traffic to Wolverhampton and a route from London and Leicester to Birmingham, Cannock Chase, and the Black Country, a route through New Street Station at Birmingham, and also access to Northampton.

The London and North Western, on the other hand, got into Derby and Leicester and into the Leicestershire coalfields.

The following curves, although constructed, were rendered unnecessary and have not been opened for traffic: Midland curve at Tamworth, three-quarters of a mile; London and North Western curve, on the Nuneaton to Leicester line to the Coventry line, three-quarters of a mile; joint curve, Stoke Golding to Hinckley, $3\frac{1}{8}$ miles.

Complex as these arrangements were, they saved the expenditure of a large amount of capital by both companies and the making of many duplicate lines.

It will be remembered that as early as the year 1846 the Midland Company obtained powers to construct a line from near Ashby-de-la-Zouch, passing through Market Bosworth and forming a junction

with the Trent Valley Railway Company's line at Nuneaton. This proposed branch was of a protective character, but having attained its object the Act was allowed to lapse and the railway was not constructed. A so-called independent railway company, in 1866, was promoted under the high-sounding title of "The London and North Western and Midland Counties Coalfields Railway," the real object of which was to give the London and North Western access to the Leicestershire collieries, the route selected by the promoters being almost exactly that decided upon by the Midland Company in 1846, and the latter Company therefore introduced a Bill in 1866 to enable it to carry out the original scheme.

Here, then, were two rival lines, the Midland and the Coalfields, which latter was, however, simply a *nom-de-plume* for the London and North Western, each trying to run a railway over the very same ground.

The outcome of these two rival schemes was that the London and North Western met the Midland Company, the "Coalfields" title was abandoned, and the line, 29 miles in length, was constructed jointly and subsequently opened, and is still worked as a joint undertaking.

During the sessions of 1859 and 1860 a nominally independent railway company, known as the "South Leicestershire," obtained powers to construct a line from the Trent Valley at Nuneaton to Hinckley and Wigston, with running powers thence over the Midland Railway to Leicester, the object of the line being to give the London and North Western Company communication with Leicester, and in 1867 the "South Leicestershire" became the absolute property of that Company.

However, by the Act of June 14th, 1860, the Midland Company secured running powers between Wigston, Nuneaton, and Coventry, and by means of an Act passed in 1861 the Midland obtained powers to make a line from Nuneaton to Whitacre upon its Derby and Birmingham section, thus obtaining a direct communication between London, Leicester, and Wigston, and Nuneaton, Whitacre, Birmingham, and all parts of the west of England. This communication was further improved in December, 1872, when a new curve was opened at Wigston enabling passengers to travel from the south and Wigston Station direct to Hinckley and Birmingham without having to be conveyed to Leicester.

The Birmingham West Suburban Railway Company was originally incorporated on July 30th, 1871, to make a local line from Albion Wharf, Birmingham, to King's Norton—a distance of $6\frac{3}{4}$ miles. By an Act of July, 1873, diversions were made, and by additional powers obtained in 1875 the undertaking was vested in the Midland, the

original shareholders getting 5 per cent. in perpetuity. It was opened as a local line on April 3rd, 1876, from Granville Street Station, and formed a junction with the Midland main line at King's Norton, the Midland providing the rolling stock. Afterwards it was connected with the western end of New Street Station, and thus formed a link so that the Midland could pass from Derby or Leicester *via* Saltley and New Street Station to Bristol, the object being to place New Street, Birmingham, on the through line instead of being a terminus so far as Midland traffic was concerned. To meet this traffic the London and North Western Company, by arrangement with the Midland, has doubled the width of its Birmingham Station and provided perfectly independent lines for the use of the Midland trains between the Grand Junction and the New Street Junction. The Midland express trains ran *via* New Street on October 1st, 1885.

The relationship of the Midland with the Severn and Wye line in the Forest of Dean colliery district recalls the fact that a very ancient Outram-line was formed between Lydney and Lydbrook in 1809 and opened in 1813, which connected the Forest of Dean with the River Severn. That undertaking was enlarged, and became known as the Severn and Wye. The next step was the building of a great structure across the Severn by the Severn Bridge Company, which was opened on October 17th, 1879, and which gave communication with the English side of the Severn. The Midland then constructed a branch to meet it from Berkeley Junction, on their Gloucester to Bristol line, to Sharpness. The Midland had running powers over the Severn Bridge. The whole of the section from Berkeley Junction to Lydbrook and the branches, including the bridge, were transferred to the joint ownership of the Midland and Great Western by the Act of 1894.

The line is $8\frac{1}{4}$ miles long, and its value is mainly on account of its mineral and goods traffic.

THE INVASION OF WALES

The next field for Midland enterprise was the invasion of Wales. But this proved rather a complicated and protracted campaign. There were, it is true, rails all the way, but the great difficulty was to get over the legal and parliamentary obstacles as well as the jealousies of rival companies. It has been already pointed out that the Midland had running powers from Stoke Works, near Bromsgrove, to Worcester over the Great Western system, and after this, by way of a concession for non-opposition to a Great Western amalgamation with the Oxford, Worcester, and Wolverhampton Company, the Midland obtained

running powers which enabled them to use the Great Western route to Hereford. The Hereford, Hay, and Brecon Railway had been constructed as an independent line, but, as usual, the line was comparatively useless and the Company powerless without through traffic. The Hereford Company, however, had running powers over the Mid-Wales and Brecon and Merthyr Companies' systems, and the Mid-Wales Company for a time worked the Hereford, Hay, and Brecon line; but when this arrangement was nearing its completion application was made to the Midland to work the line.

At a Midland meeting held at Derby on May 18th, 1869, it was explained that the clauses contained in certain Bills promoted by other companies, under which the Midland sought to obtain permissive powers for using the Barton Station at Hereford and to participate in the management of the Hereford, Hay, and Brecon Railway, had been dropped.

The report of the Hereford, Hay, and Brecon Company for the half-year ending December 31st, 1869, says a temporary agreement for working the line by the Mid-Wales Company terminated on September 30th, 1869, since which date the Midland had worked it.

Thus the Midland secured a through communication as far as Brecon. As early as the year 1850 there was a line formed known as the Swansea Valley Railway, which had been extended from Swansea to Ynis-y-Geinon, and the name changed to the Swansea Vale Railway.

This line was leased by the Midland Company on July 1st, 1874. All that was required now was the connecting link between Brecon and Ynis-y-Geinon Junction. This had already been supplied by a section of the Neath and Brecon system, and all that was necessary was power to run over it, which power was duly obtained, thereby completing by ownership and running powers direct communication from Swansea to the whole of the Midland system. But such an invasion of Welsh territory was not viewed with equanimity by the Great Western Railway, and, doubtless with the view of safeguarding what it considered its own interests, the Great Western Company raised a very nice point of law by challenging the right of the Midland Company to run through trains on to the Hereford, Hay, and Brecon line over the Great Western Company's connecting curve at Hereford. Although this connecting link was of very short extent, it formed the key to the whole situation, for without its use through traffic, either goods or passenger, was impossible, as the Midland could only obtain access to the line which it had leased by passenger vehicles and by carting through Hereford. After a great deal of legal fencing and failing to come to an amicable arrangement, the Midland Company, being convinced

that it had the necessary powers, notified the Great Western Company that a train would be sent to run to Brecon over the curve in question. This was met by the Great Western Company by a distinct refusal, and not only were the signals placed at "danger," but the line was actually blocked by an engine and some wagons. The driver of the Midland engine, who had an unusually powerful locomotive under steam, was particularly anxious to push the obstruction out of the way, but this plan was naturally not adopted. To further make it impossible for the Midland train to proceed the rails were pulled up, thus effectively stopping communication. The dispute was, as a matter of course, carried into the law courts.

In October, 1869, a station was about to be erected at Moorfields, Hereford, as a terminus for the Hereford, Hay, and Brecon Company. They had formerly had a terminus near the same spot.

In the session of 1870 the Hereford, Hay, and Brecon Company had a Bill for making a line from Moorfields Station to the Great Western Railway and to enable the Midland Railway to take over the Hereford Company and use the junction. At any rate, they advertised their intention to introduce such a Bill.

The parliamentary history of the connection at Hereford appears to be (1) that by 22 and 23 Vict. cap. 84 a line was to be made from Brecon through Hay to the Shrewsbury and Hereford Railway at Hereford; (2) a deviation was authorised by 23 and 24 Vict. cap. 127 enabling the Hereford, Hay, and Brecon Company to relinquish this junction and in substitution to form a junction with the Newport, Abergavenny, and Hereford Company. This became West Midland, and the West Midland became Great Western Railway property. Thus the arrangements became very involved and complicated.

On January 20th, 21st, 22nd, and February 11th, 1873, a suit was heard in the Rolls Court before Lord Romilly—the Midland Railway *v.* Great Western Railway—in which the plaintiffs, the Midland Railway Company, sought to have it declared that by virtue of an agreement dated September 14th, 1869, they were entitled to use and run trains over a certain junction at Hereford, and to restrain the Great Western Railway from obstructing plaintiffs from using that junction. It appeared that the Hereford, Hay, and Brecon Company had, by a decree of the Court of Chancery, been declared to be entitled to use it, and that by the agreement of September 14th, 1869, they made over their line to the Midland Railway. The latter claimed to use the junction under this agreement. Lord Romilly dismissed the case with costs, considering that

one railway company could not delegate all its powers to another without the consent of Parliament.

The Midland Railway appealed from this decision, and on April 25th, 26th, and 28th, 1873, the case came on in the Court of Appeal before the Lords Justices. The agreement of September 14th, 1869, it now appears, was for two and a half years from that time, *i.e.* till March 14th, 1872. Their lordships were of opinion that there was nothing in the agreement illegal or contrary to public policy, and that the plaintiff company were entitled to the injunction prayed for to restrain the defendants from obstructing the junction, with costs up to the hearing. In these suits Messrs. Beale, Marigold, and Beale were solicitors for the Midland Railway, Messrs. Young, Maples, and Co. for the Great Western Railway, Messrs. Tilleard, Godden, and Holme for the Hereford, Hay, and Brecon Company.

On July 30th, 1874, an Act was passed, "The Midland Railway (Hereford, Hay, and Brecon Railway Lease) Act, 1874," under which the line is leased in perpetuity to the Midland Railway, who paid a yearly sum as rent, rising from £14,511 17s. in 1875 to, and remaining at from 1882, £20,354 8s. per annum, payable on January 1st and July 1st in each year, the Midland to have full powers of booking all kinds of traffic to and from London and North Western and Great Western Railways and the Hereford, Hay, and Brecon line *viâ* Hereford.

Thus, after three years' litigation, with verdicts first on one side and then on the other, this great dispute was finally decided in favour of the Midland, and thereby was sanctioned and established through communication between Swansea and the Midland system. By this means also a number of semi-independent lines, which were by themselves of comparatively little value, were, by being made links in a system of through communication, greatly enhanced in importance and became invaluable feeders to the Midland system. The Hereford, Hay, and Brecon line was vested in the Midland in 1886; the Swansea Vale in 1876. On the Mid-Wales and the Brecon and Merthyr the Midland have running powers; and the Midland work over the Neath and Brecon to its own Swansea Vale line.

CHAPTER XXIII.

A MASTER-STROKE

THE years from 1872 to 1875 will long be memorable for the great struggles which occurred and for the inauguration of a series of reforms, the like of which had never been previously heard of in the railway world. The Midland were pioneers in this great work of reform, and by its spirited and far-seeing policy laid the foundations of a magnificent prosperity by looking to the interests and requirements of the great mass of the people. First of all, on March 19th, 1872, the Midland suddenly announced that on April 1st next third-class passengers would be carried by all Midland trains, and the intimation was at once hailed as a master-stroke of policy. Previously to this third-class trains were slow, with poor accommodation, and an almost total want of comfort. They had to shunt at any and every junction to allow the faster trains to pass, and the result was that the third-class passenger had to do a heavy and almost continuous "penance" during the whole of the period he or she was travelling; and the time occupied on long journeys was altogether such as severely to try the best of strength and tempers. It was estimated that the change would result in a saving, and it was found that by the abolition of "third-class trains" the mileage run was reduced by no less than 500,000 miles per annum, while the saving under this head amounted to £37,000 a year. Thus there was no sacrifice of revenue, for the Midland carried far more passengers than previously. This was followed on October 7th, 1874, by another surprise, when the Midland boldly announced that on and after January 1st, 1875, second-class would be abolished. The whole railway world was excited, and the rivals of the Midland were in arms against what was regarded as a daring innovation.

In the money article of *The Times* there appeared the following paragraph:—

"It is stated that the railways most directly affected by the policy of the Midland in abolishing second-class carriages have decided

to adopt a retaliatory policy. They do not intend to abolish any one of the three classes, but to lower second-class fares below Midland first, and to run special first-class trains to all competing points against the Midland. Whatever its financial soundness—and we should question it very gravely—an attempt to coerce the Midland after this fashion is, to say the least, somewhat petty, and cannot be regarded as a specimen of sagacious administration.”

Whatever its reception at the time, there can be no doubt that it was a great reform conceived in no selfish spirit, but on the broad lines of true policy and human progress. It was a bold movement, and upon its success or failure depended the reputation of those primarily responsible for so great a change—a change which, small as it may now—like most other changes and reforms in the world—appear, was then regarded as almost revolutionary in its character; as an unwarranted attack upon neighbouring and competing lines; as an invasion of the rights and privileges of the great middle class to consideration, provision for their reasonable and legitimate travelling requirements; and as a policy of “equality and fraternity” thrust upon the English people which they neither appreciated nor desired.

It is difficult to realise after a quarter of a century how men of sound business acumen, politicians, and many critics of the day could see so many evils in so small a “revolution,” which would be better described as an important but necessary change in the business management of a great public concern. But although at this distance of time it may seem to the casual observer to have been a comparatively small matter and a “battle in a teacup,” it was, after all, a great departure; it was the initiation of a great movement for the better treatment and the greater comfort of the great bulk of those who travel than had been previously considered either possible or desirable. It, in fact, proved to be the Magna Charta of the third-class passenger, and formed the intermediate stage of the great three-fold movement which has since led to so many other improvements of the greatest advantage. First of all there was third-class by all trains; next, the abolition of second-class, a reduction of first-class fares to the price of second; and thirdly, there was the provision of cushioned seats for third-class carriages, which practically meant the abolition of the old third-class carriages and the levelling up of the third to the comfort of the old second-class. The wisdom and ability shown in engineering these great changes in a quiet and effective way least calculated to disturb the susceptibilities of others and at the same time safeguard the interests of Midland shareholders was most conspicuous. In order to have a clear conception of the

matter, the basis of the change must be considered. When the Midland Board came to consult (November 4th, 1874) as to the new rolling stock which should be ordered for the opening of the Settle and Carlisle Railway, the question of classes was forced very strongly on the attention of the directors. It had been long under consideration, and it had been further observed that the passenger traffic was not extending in a degree corresponding with the increase in goods and mineral traffic. They also came to the conclusion, from a long series of careful observations, that a great deal of unnecessary weight had to be carried in their trains. Again, they found that the capital cost of a first-class carriage of three compartments was about £450, and the yearly earnings £530; the cost of a second-class carriage of four compartments about £250, and the yearly earnings about £430; and the cost of a third-class carriage of four compartments £270, and the yearly earnings about £890. So that the first-class carried 118 per cent. on its cost, the second-class 122 per cent., and the third-class 330 per cent. The carefully ascertained facts led the directors, whilst in meeting assembled, not only to arrive at their decision, but to have the circular put in type and sent out to the secretaries of all other railway companies before they left the room. The formal resolution declared that on and after January 1st, 1875, only two classes of passengers would be carried on the Midland Railway—first and third; that first-class fares be reduced to 1½*d.* per mile and third-class fares to be continued as at present, return tickets at reduced fares to be discontinued.

The three months' notice to the other railway companies of the kingdom was at once followed by a "council of war" of the directors and managers of the Great Northern, the Great Western, the Lancashire and Yorkshire, the London and North Western, the Manchester, Sheffield, and Lincolnshire, and the North Eastern Railway Companies, held at Euston under the chairmanship of Mr. R. Moon. A resolution was unanimously adopted and forwarded to the Midland Company to the effect that the Midland Board be "respectfully requested to postpone the proposed action in reference to the abolition of the second or intermediate class and the reduction of the first-class fares until after the ensuing half-yearly meetings; and that in the meantime the companies represented at this meeting will be willing to consider with the Midland Company what change, if any, should be made in the conduct of the passenger traffic of the country in the direction of increased facilities, with fair regard to the interests of railway proprietors; and that this meeting be adjourned for the reception of the reply."

On the same day, November 5th, 1874, the Chairman of the Midland Company (Mr. Edward Shipley Ellis) addressed a spirited circular to the shareholders of his Company, in which he set forth that their action had been so keenly, and in some cases so unfairly criticised that he deemed it right to state explicitly the reasons which influenced them in recommending the change. "The charge," he stated, "has been freely made that we are abolishing second-class carriages and reducing first-class fares with the object of injuring adjoining companies and entering upon a course of new and ruinous competition which deserves reprisals at their hands. This charge is totally unfounded. Our only objects are to increase the profits of the Midland Company by reducing the cost of working the passenger service, and by obtaining a greater number of passengers at lower first-class fares. It is to the encouragement and increase of the local traffic on our own system that we look for a return, not to the abstraction of traffic from other companies. A change of this character may prove less beneficial to other companies than to us—that it will prove injurious to any, your directors do not believe—but we hold ourselves responsible in the conduct of affairs of this Company to Midland proprietors alone, and we are not justified in rejecting a change which will be beneficial to them because it may not suit one or more neighbouring companies, the circumstances of whose traffic may be widely different, and who, after all, are keen competitors with the Midland, not mindful, as the last few years have shown, of the interests of the Midland shareholders." He also reviewed the policy of extension, which had been miscalled aggression, which had been forced upon the Midland, and added, "No one who has watched the subsequent development of the districts traversed by the Midland can doubt the enormous advantages which the public have derived."

With the object of increasing the passenger receipts *pro rata* with the increasing goods traffic, the experiment was tried in 1872 of conveying third-class passengers by all trains. "The success of that policy justifies your directors in asking your confidence and support in carrying out the present proposal, which is based upon the former change and is an almost necessary consequence of it."

A special meeting of the shareholders was held at Derby on November 17th, at which Mr. Ellis clinched the matter by declaring "the question now to be determined by the shareholders is really whether your directors are to be allowed to manage their own affairs, or whether we are to submit to a policy to be determined by our rivals." The result was that the proposals were endorsed by 44,305 votes as against 6,177. This decisive confirmation at once put an end to the threatened

interference of the other companies, and January 1st, 1875, saw the great change in full operation.

Twelve months later the Chairman of the Company had the satisfaction of informing the shareholders that the change had proved very satisfactory. He also added that the change had caused them to gain ground with the public, but they could not hope to satisfy their competitors, to whom the Midland conceded what they appeared to grudge the Midland, namely, the right to manage their own affairs in their own way. Having thus further secured public confidence, as well as the confidence of their shareholders, the Midland further determined (1875) to cushion all third-class carriages and in other ways to add to the comfort of those who travelled third-class. The wisdom of delaying this further reform till events had matured is apparent, for to have launched both schemes at one and the same time would probably have been fatal to both; for it would have been tantamount to a declaration of carrying third-class passengers in second-class carriages at third-class fares, and neither the shareholders nor the public were prepared for so great a change. Time and experience have most amply justified a step which was so seriously challenged at the date of its inception, and a whole list of other benefits have followed in its train: third-class lavatory compartments, third-class breakfast and dining cars, and many other very substantial improvements. The Midland were the pioneers in this great movement, and other companies were compelled to improve their accommodation in a corresponding degree. The heroes of this noteworthy struggle were beyond all question Mr. Edward Shipley Ellis, the Chairman, whose quiet, steady, persistent Quaker determination was accompanied by dignity and confidence, and Mr. James Allport, the General Manager, whose transcendent genius as a railway administrator laid the foundations and placed the fortunes of the Midland Company on a solid and enduring basis. Mr. James Allport, beyond all cavil or question, was by far the ablest man of his time as a railway administrator in this or any other country, and when he laid down the burden of his general managership he was elected a director of the Company and voted by the shareholders the sum of £10,000 in recognition of his long and invaluable services.

As Mr. Ellis stated to the writer at the time, "We are not going to be cajoled; we are not going to be intimidated from the discharge of a great public duty, and a duty to our shareholders. We have confidence in Mr. Allport, and we are not going to be driven from the path of duty by either threats of reprisals or by anything else. We calmly await the verdict of experience and results." How great these results are only those who remember the old order of things and enjoy the

new privileges can adequately tell. And side by side with all this we have the continued and continuing prosperity of the great undertaking whose destinies have fallen into no less able and devoted hands.

In the year 1874 the Midland Company introduced the first complete American train into this country, the cars having been built by the Pullman Car Company at Detroit and sent over in pieces to be put together at Derby. These cars were 57 feet in length over the end platforms and ran upon two four-wheeled bogies; they were provided with central single buffers and automatic couplings, the engines intended to work these trains being specially fitted with central buffers.

On March 17th, 1874, an officials' special express to test the running of the cars at very high speed was worked between Derby and St. Pancras with engine "No. 906" and two cars. The time allowed for the journey was only $2\frac{1}{2}$ hours and included two stops of three minutes each, and a speed of 75 miles an hour was attained on parts of the journey; and four days later (March 21st) a special express of four cars ran from London to Bedford and back and conveyed about eighty visitors, all of whom were greatly interested in the trip; and upon June 1st, 1874, the new train of five cars commenced regular running, leaving Bradford at 8.30 a.m. and returning at 12 midnight from St. Pancras.

The cars for first, second, and third-class passengers were the property of the Midland Company, and ordinary fares were charged; but the drawing-room and sleeping cars were the Pullman Company's, and for which a small extra charge was made. On April 1st, 1875, American car trains were introduced between Liverpool, Manchester, and London, and in addition to the day trains a sleeping-car was run to Liverpool at midnight from St. Pancras.

The American visitors very highly appreciated the Pullman trains, but many English travellers expressed a preference for the ordinary compartment vehicles. Consequently, on May 15th, 1876, the Company provided Midland carriages in place of the first and third-class cars. On March 11th, 1878, the complete American trains were again introduced between Liverpool, Manchester, and London, but the Manchester passengers expressed their opinions so strongly in favour of compartments that the first and third-class Midland cars were again withdrawn on March 19th, 1878, since which time they have been in occasional use for special parties.

This furnished a notable instance of providing luxurious travelling, which failed at the time to meet with its due reward and appreciation;

for there can be no question whatever that for long-distance travelling the Pullman bogie cars in 1874 were by far the finest trains in the kingdom. There can be no doubt that the spirited action of the Midland Company in this respect led to the general introduction of bogie vehicles on English railways, and marked an important epoch in the art of making railway travelling comfortable and indeed enjoyable, while at the same time adding greatly to the security and safety of running at a high speed.



INTERIOR, THIRD-CLASS DINING CAR.

The Pullman Car Company, on July 10th, 1882, introduced first-class dining cars upon the Midland, one being attached to the 5 p.m. express from St. Pancras to Liverpool, the other to the 4.5 p.m. up train from Liverpool.

The Midland Company having purchased the whole of the Pullman day cars, first-class passengers, on November 1st, 1883, were allowed to ride in the day cars without extra payment, except, of course, the price of dinner provided in the dining cars. In February, 1888, the Company also purchased the sleeping cars, and the fare was fixed at 5s. extra between all points.

In May, 1900, four new American Pullman sleeping cars of the latest pattern were put on between St. Pancras and Edinburgh and Glasgow.

The cars were manufactured in America, taken to pieces, shipped to Liverpool, and afterwards reconstructed at the Company's works at Derby. They are 60 feet in length, and run on two six-wheeled bogies. One half of the car is taken up by four state-rooms, each of which is fitted up with a bed and folding washstand. All the berths are on the same level, the plan of putting one over the other having been abandoned in the state-rooms as well as in the general room, which occupies the other half of the car. This general room is provided with seats for day travelling, and at night curtains are provided which completely shut off each berth from the rest of the car. Altogether there are eleven berths, five of which are in the state-rooms, which are mainly intended for ladies. The cars are 8 feet wide inside, and 8 feet 10 inches from floor to roof. They are most elaborately furnished; there is a refreshment buffet, and in fact everything that can conduce to the comfort of the passengers.

CHAPTER XXIV.

SETTLE TO CARLISLE AND THE FORTH BRIDGE

THE Midland Company, by virtue of its lease and ultimate purchase of the (Little) North Western Railway, extended as far north as Ingleton, where it met and formed what is termed "an end-on junction" at Ingleton with the Lancaster and Carlisle Company's system, this latter line giving communication with Scotland to both the London and North Western and Midland routes *viâ* Low Gill and Carlisle. However, from the first the London and North Western had a considerable controlling interest in the Lancaster and Carlisle Company, and ultimately leased the line and rolling stock for no less a period than 1,000 years.

To all intents and purposes the line passed from the hands of an independent company into those of a powerful rival. True, the London and North Western Company did work the Midland traffic between Ingleton and Carlisle, but with such serious delays, inconveniences, and changes of carriages that in point of fact the Midland Scotch traffic was practically completely killed. The Midland Board and Mr. Allport, about 1865, determined that this serious obstruction could no longer be endured, and complaint was made to the London and North Western Company, by whom it was suggested that the Midland might purchase a half-share of the line and run over it, but the London and North Western was to "control" the rates and fares charged by the Midland. Such a suggestion the Midland Board could not for one moment entertain; and as they had already had such bitter experiences of "running powers" between Hitchin and King's Cross, they came to the only possible conclusion that the most satisfactory way of forming communication with Scotland was to make an entirely new line of its own from Settle to Carlisle. Naturally the London and North Western viewed with alarm the prospect of the Midland arriving at Carlisle upon its own rails, and opposed the Bill in Parliament, but without avail, as it was perfectly evident to the Select Committee that the Midland was only acting in self-defence against serious and

unnecessary obstruction to its traffic; and accordingly, on July 16th, 1866, the Midland was authorised to construct its Settle and Carlisle line, and to use the Citadel Station at that city, £1,650,000 capital to be raised in shares and £555,000 by loan. The passing of this Act gave great satisfaction to the Lancashire and Yorkshire and North British Companies, and it was proposed that the Midland and Glasgow and South Western Companies should completely amalgamate.

Seeing that the Midland would firmly establish itself in Scotland, the London and North Western appears to have regretted having broken off the negotiations with reference to the use of its Lancaster and Carlisle line, and it became "hinted" that they were willing to reopen the consideration of the subject.

At this period a somewhat extraordinary incident occurred in the relationship between some of the shareholders and the Midland Board of Directors. It appears that a considerable number of persons holding stock in the Midland Company were also interested financially to an equal, if not greater, extent in the Lancaster and Carlisle and London and North Western Railways. Consequently, having an eye to their own divided interests, they were in favour of the Midland Company abandoning its Settle and Carlisle Act and coming to terms for the use of the Lancaster and Carlisle Line. These gentlemen formed themselves into a Midland Shareholders' Association, with a Manchester solicitor as its secretary, and they adopted a very bold and unusual course of procedure, for, quite unknown officially to the directors of the Midland, they proceeded to interview the Chairman and officials of the London and North Western at Euston, with whom they discussed the terms upon which their projects could be carried into effect. They actually so far succeeded as to obtain a statement of the terms of the London and North Western, which were, in effect, that the whole matters in dispute should be referred to the President of the Board of Trade, conditional to the Midland Company abandoning its Settle and Carlisle line. This proposal, when communicated to the Midland Company, was described by Mr. Hutchinson as childish, and the shareholders as a body expressed their views and feelings by receiving the news with hilarity.

The heavy expenditure of capital of the Midland, however, at this period became so onerous that a policy of caution and reserve became necessary, and accordingly at a meeting of the shareholders on January 15th, 1868, Mr. Hutchinson announced that the future policy of the Board would be the suspension of all works which would not involve too great a sacrifice, postponement of all new lines not yet commenced, and the enforcement of the most rigid economy. A

consultative committee, consisting of nine shareholders, headed by Mr. Baines, M.P., was appointed to confer with the directors. The result of their inquiries was given in a report to the shareholders, in which they "bore abundant testimony to the integrity and ability with which the administration of the directors had been conducted." They also emphasised the fact that certain large expenditure which other companies debited to capital had in the case of the Midland been paid out of revenue, as well as the interest on £5,000,000 of unproductive capital; they, however, expressed some regret that the Company had been induced to undertake arrangements beyond what could properly be undertaken at one time without great inconvenience to the shareholders.

In pursuance of this policy negotiations were reopened with the London and North Western for the use of their line between Ingleton and Carlisle, the result being that it was determined, if possible, to abandon the construction of the Settle and Carlisle extension, both companies having come to satisfactory terms, and both lodged a Bill in Parliament to carry out this arrangement. The opposition to this abandonment of another independent route to Scotland was opposed by the Lancashire and Yorkshire and the North British Railway Companies, on the ground that the projected line would be of enormous advantage to their traffic by giving them a competitive line with the North Western. After six days' contest in Parliament it was decided that in the public interest the abandonment Bill must be thrown out and the Settle and Carlisle line constructed. This decision carried disappointment to many of the Midland shareholders, but Mr. Hutchinson comforted them with the fact that the traffic between England and Scotland, disclosed by the testimony before Parliament, was more valuable than they had previously been led to expect.

The surveying and formation of the $72\frac{1}{4}$ miles of line from Settle to the junction with the North Eastern Railway at Carlisle were works of great difficulty. The country to be traversed was one of the wildest districts, with mountain ranges, wild gorges, and almost precipitous cliffs barring the way. However, great as were the obstacles to be encountered, they were all most successfully overcome, and the line constitutes a great engineering work—certainly one of the most important which has been achieved in railway construction in this country.

Branching off from the old main line at Settle Junction at a height of 425 feet above sea-level, the railway is carried up the valley of the Ribble for a distance of 15 miles to Blea Moor Tunnel, the gradient throughout this portion being the severe one of 1 in 100. The

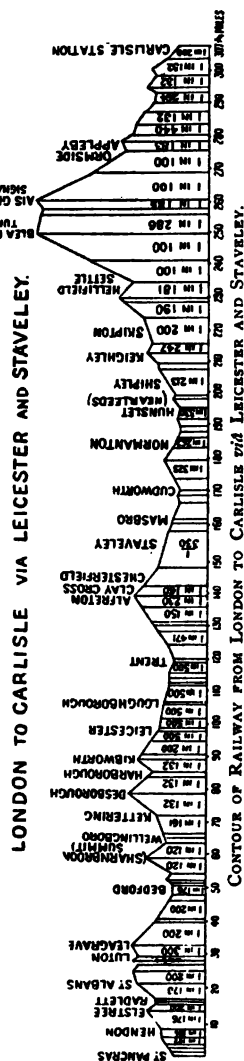
first important work after leaving Settle Junction is at the Skipton Road, which it crosses by a fine skew girder bridge, having a span of 62 feet. A deep cutting is next entered through grit stone, which provided materials for the construction of many of the bridges. A vast quantity of earth was excavated on the west side of the railway, and was deposited to form the goods yard and site of the Settle Station, which included an area of about ten acres. On its way across Kirk Gate, one of the principal streets of Settle, a viaduct was constructed having four arches, each of 30 feet span and 23 feet high. Another viaduct spans Giggleswick Road, and is succeeded by a high embankment containing no less than 250,000 cubic yards of earth, which had been excavated from several cuttings in the neighbourhood. After passing the turnpike road to Ingleton, an embankment commences, and contains no less than 280,000 cubic yards. Thirteen miles from Settle the Batty Moss Viaduct is reached. It spans the valley leading to Ingleton, and is one of the most important works on the line. It is 1,328 feet in length, composed of twenty-four arches, and the rail-level is 100 feet above the ground. Shortly after passing over this great work we enter the Blea Moor Tunnel, another heavy and very costly undertaking. It is 1 mile 865 yards in length, and the rail-level at the highest point in the tunnel is 1,151½ feet above the sea and 500 feet below the summit of the mountain through which it pierces. This stupendous engineering task was accomplished by working at each end and from seven intermediate shafts. The strata of the mountain consists of grit stone, limestone, and shale, and although sufficiently hard to require blasting, it was not stable enough to avoid the necessity of lining this tunnel with brickwork.

Proceeding at this high elevation for 11 miles to the Ais Gill signal-box, 1,167 feet above the sea-level, the line passes *en route* over Dent Head Viaduct, a little way beyond the Blea Moor Tunnel. This Dent Head Viaduct consists of ten arches, is 596 feet long and 100 feet above Fell End Gill, which it crosses. During the next 17 or 18 miles the works continue to be of the severest character. A very good general idea of their value and extent may be gathered from the fact that in this distance are included forty-seven cuttings, amounting in length to 2½ miles; five viaducts, whose combined length is half a mile, and from 50 to 145 feet high; four tunnels, whose united length is over a mile, and in several places are 140 feet below the tops of the hills. In addition to all these very costly structures there are sixty-eight road bridges, from 10 to 50 feet span, and 100 culverts, from 2 to 10 feet wide, together with a vast amount of lesser work. After traversing the Dent Valley for two miles the line passes to the

right, and by means of a long tunnel through Rise Hill it emerges in Garsdale. It runs along this valley as far as the Moorcock Inn, where it soon passes over Ais Gill Moor, which is the summit of the line, the rails being at this point no less than 1,167 feet above the level of the sea. The railway then runs several miles down Mallerstrang, which is the commencement of the valley of the Eden, but owing to the rapidity of the fall of the valley, the line skirts the hill on the western side and passes over the Birkett Fells, and afterwards over the North Eastern branch line to Tebay by means of the Smardale Viaduct. Just before reaching Crosby Garrett Station, Crosby Garrett Tunnel and Viaduct are encountered. The tunnel is through grit and limestone, and is followed by a cutting 176 yards long and 65 feet deep; the viaduct is 270 feet long and 53 feet high, having six arches of 38 feet span. Here heavy cuttings follow, and then High Gisburn Viaduct, also of six arches, after which Helen Tunnel is reached. One of the cuttings at this point is 500 yards in length and 110 feet deep.

Soon after passing the Ais Gill signal-box the line practically descends continually by gradients of 1 in 100 for about 15 miles to Ormside Viaduct. At Crowdundle Beck there is a viaduct of 50 feet high, a tunnel at Cudgarth 800 yards long and 100 feet deep, and another tunnel 200 yards long under the west bank. At Eden Lacy the line crosses the Eden on a viaduct, and south of Lazonby there is another short tunnel of 100 yards. There are also two short tunnels in Eden Brow Wood, closely followed by the Armathwaite Viaduct, Dry Beck Viaduct, and an enormous embankment containing over 400,000 cubic yards of earth.

The gradients become less severe from Ormside Station to Carlisle. There are many wild and picturesque scenes along this route, and in winter, when the snow and wind prevail, constant care and watch-



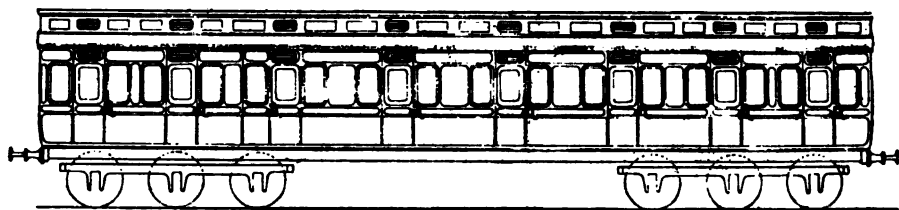
fulness are necessary to keep the line from being snowed up. Snow ploughs are maintained at convenient points, and vast barriers have been constructed to hold back the drifting snow. When the wind blows its fiercest, in some of the most exposed parts of the line and in narrow gorges, it materially affects the speed of trains and frequently makes the use of two engines an indispensable necessity.

The contractors for the formation of the road met with many unexpected difficulties, which were altogether unprovided for in their contracts with the Company. So serious and costly were these items for exceptional expenditure that during the progress of the works the contractors communicated the fact to the directors, that if they were to construct the line for the sum originally specified they would be completely ruined. Mr. Edward Shipley Ellis, who was Chairman at this period, and the Board, supported by the whole body of shareholders, determined that the work must proceed with unabated vigour; that as certain very costly work must be done which could not be foreseen even by the engineers or by the contractors, it must be and was paid for at a fair and reasonable rate as between the contracting parties. That determination was boldly and plainly announced by Mr. Ellis to the shareholders, and he emphasised his views by his strong conviction that they must at all costs adhere to that which was fair, reasonable, and right as between man and man.

Mr. Ellis placed the whole of the facts from a business point of view before the half-yearly meeting of the shareholders on February 22nd, 1876. He said: "The expenditure upon the Settle and Carlisle line has very much exceeded the estimates. At first the directors were sanguine that the line might be constructed for £2,200,000; in fact, they believed that that would be the case even after the contracts were let. But the contractors had no sooner got the work in hand than they found the cost would be far beyond their anticipations. Very soon the Board had to take the first contract for the first section of the line out of the hands of the contractor and carry it on themselves. With regard to the other three contractors for the second, third, and fourth stages of the line, if the Board had not under the exceptional circumstances of the case assisted them very largely beyond the amount of the contracts, we believe they would have been ruined. The circumstances were altogether exceptional; there was the enormous rise in wages and materials, and the natural difficulties of the country through which the line passed. The result was that up to December 31st, 1875, £3,330,000 had been expended on the line, and another £137,000 would be further required, making a total of £3,467,000 for 72 miles of double rails and 8 miles of single rails,

forming the Hawes branch. The works were extremely substantial ; in fact, there is not a more perfect line of railway in the world."

It ought to be recorded that the engineer for this great undertaking was Mr. Crossley, who for the long period of forty-two years honourably filled the position of Engineer to the Company. On his retirement from his onerous duties he still remained, at the request of the directors, Consulting Engineer, in order that the Settle and Carlisle extension might be completed under his personal supervision. When this, his greatest and most gigantic task, was at length accomplished, Mr. E. S. Ellis, the Chairman of the Company, at the half-yearly meeting of the shareholders on August 12th, 1875, paid a graceful tribute to the exertions and abilities of Mr. Crossley, who would, he said, always be remembered as being identified with the most interesting episodes of the line, and especially as having carried out



BOGIE CARRIAGE, 1875
(Built for the Scotch Express Trains).

this, the greatest work since the formation of the Midland Railway Company.

At Carlisle the Midland has constructed a goods station for its own traffic, but for passenger traffic it uses the North Eastern rails, leading to the Citadel Station, which is the joint property of the London and North Western and Caledonian Railways.

Commenced in November, 1869, the Settle and Carlisle line was not opened for goods traffic till August 2nd, 1875, and for passenger traffic on May 1st, 1876, thus having taken six years to complete.

A party of directors and officials of the Company inspected the line previous to its opening for passenger traffic. The interesting party included Mr. Ellis, Chairman, son of the notable John Ellis who took the reins when they fell from the hands of King Hudson and inaugurated the policy that saved the Midland system. There was the veteran Sir Isaac Morley, who rocked the cradle of more than one of our early lines ; there was Mr. Allport, after forty-five years' experience, combining the enterprise of youth with the wisdom of

age ; there was Mr. Carter, who for many years had charge of all the Midland Bills in Parliament, and of whom it is said that he never lost a Bill ; and there was Mr. Thompson, the Vice-Chairman ; Mr. Mappin and Mr. Thomas, directors ; Mr. Crossley, the late Engineer ; Mr. Johnston, his successor ; Mr. Saunders, the Architect ; Mr. Gratton, and others.

“*Finis coronat opus !*” was said to be the ejaculation of Mr. Crossley, the Engineer, when the party reached Carlisle ; and the opinion generally expressed was that, next to the London and Bedford line, the Settle and Carlisle was the greatest and most vital of the developments of that bold policy of extension by which the Midland has triumphed over the schemes of its eastern and western rivals.

For the through goods traffic to Scotland the Midland is a joint owner of the goods traffic lines in combination with the Caledonian, Glasgow, and South Western and London and North Western Companies, thus placing its goods traffic in direct communication with the Scotch railway companies.

The through trains between the Midland system and Scotland were originally formed of the Midland Company's carriages and Pullman cars ; but as this necessitated the Glasgow and South Western and North British Companies having to pay the Midland large sums for carriage hire, it was decided that from July 1st, 1879, the trains should be composed of carriages and vans which compose the Midland Scotch joint stock and are the tri-joint property of the Midland, Glasgow and South Western, and the North British Companies in equal shares, and the vehicles are distinguished by the letters “*M.S.J.S.*”

This arrangement continued until July 1st, 1899, when it was partly modified, and further alterations were made in 1900, the effect of which is that the splendid new corridor trains which are running from St. Pancras to Glasgow are the joint property of the Midland and Glasgow and South Western Companies only, and carry the initials “*M. & G.S.W.*” ; while the trains for the Edinburgh traffic are owned by the Midland and North British Companies, and the vehicles are marked “*M. & N.B.*” However, the locomotive power for working the joint trains has always been provided by each Company over its own system.

THE FORTH BRIDGE

As the Midland Company have the largest financial interest in the Forth Bridge, which is owned by a separate company, some details regarding this structure, which is one of the engineering wonders of the world, ought to be here recorded. The Forth Bridge, which

greatly improved the railway communication between the Midland and other lines in England and the north of Scotland, was practically forced on the Midland, the North British, the Great Northern, and North Eastern Companies. But although owned by an independent company, the bridge is worked and maintained by the North British Company.

An Act for the construction of a bridge across the Forth at Queensferry was obtained in 1873, but the work was not proceeded with; and in 1882 another Act was obtained, and in 1883 the building of the bridge was commenced. The capital of the Company amounted to £2,325,000, with £774,999 of debenture stock, the total amount received being £3,048,333. The financial difficulties were met from the first by a guarantee of 4 per cent. perpetual dividend by the following companies in the proportions named:—

	Per cent.
Midland	32½
North British	30
Great Northern	18½
North Eastern	18½
	<hr/> 100

The structure was completed and opened by His Royal Highness the Prince of Wales on March 4th, 1890. Mr. M. W. Thompson (afterwards Sir Matthew), the Chairman of the Midland Company, was also Chairman of the Forth Bridge Company at the formal opening of the bridge, which was attended by eminent engineers from all parts of the world.

The main facts were admirably set forth by the Prince of Wales in his speech on the occasion, when he said:—

“I had the advantage, nearly five and a half years ago, of seeing the Forth Bridge at its very commencement, and I always looked forward to the day when I should witness its successful accomplishment. (Cheers.) I may, perhaps, say that in opening bridges I am an old hand. (Laughter.) At the request of the Canadian Government I performed the ceremony, thirty years ago, of opening the Victoria Bridge over the St. Lawrence at Montreal, putting in the last rivet, the total of rivets being one million. To-day I have performed a similar ceremony for the Forth Bridge, but on this occasion the rivets number nearly eight millions instead of one million. The construction of the bridge has been on the cantilever principle, which has been known to the Chinese for ages, and specimens of it may be seen likewise in Japan, Tibet, and the North-West Provinces of India. Work of this description has hitherto been carried out on small dimensions, but in this case the engineers have had to construct a bridge in 30 fathoms of water, at the height of 150 feet above high-water mark, and crossing two channels, each one-third of a mile in width. Had it not been for the intervening island of Inchgarvie, the project would have

been impracticable. It may, perhaps, interest you if I mention a few figures in connection with the construction of the bridge. Its extreme length, including the approach viaduct, is 2,765 yards, $1\frac{1}{2}$ of a mile, and the actual length of the cantilever portion of the bridge is 1 mile and 20 yards. The weight of steel in it amounts to 51,000 tons, and the extreme height of the steel structure above mean water-level is over 370 feet, above the bottom of the deepest foundation 452 feet, while the rail-level above high water is $156\frac{1}{2}$ feet. Allowance has been made for contraction and expansion and for changes of temperature to the extent of 1 inch per 100 feet over the whole bridge. The wind pressure provided for is 56 lbs. on each square foot of area, amounting in the aggregate to 7,700 tons of lateral pressure on the cantilever portion of the bridge. About 25 acres of surface will have to be painted with three coats of paint. (Laughter.) As I have said, about eight millions of rivets have been used in the bridge, and 42 miles of bent plates used in the tubes—about the distance between Edinburgh and Glasgow. Two million pounds have been spent on the site in building the foundations and piers, in the erection of the superstructure, on labour in the preparation of steel, granite, masonry, timber, and concrete, on tools, cranes, drills, and other machines required as plant; while about two and a half millions has been the entire cost of the structure, of which £800,000 (nearly one-third of this amount) has been expended on plant and general charges. These figures will give you some idea of the magnitude of the work, and will assist you to realise the labour and anxiety which all those connected with it must have undergone. (Cheers.) The works were commenced in April, 1883, and it is highly to the credit of everyone engaged in the operation that a structure so stupendous and so exceptional in its character should have been completed within seven years. (Cheers.) The opening of the bridge must necessarily produce important results and changes in the railway service of the east coast of Scotland, and it will, above all, place the valuable manufacturing and mineral producing district of Fife in immediate communication with the south side of the Firth of Forth. When the Glenfarg line, now nearly completed, is opened for traffic, the distance between Edinburgh and Perth will be reduced from 69 to 47 miles, and instead of the journey occupying, as at present, 2 hours and 20 minutes, an express will be able to do it in an hour. (Cheers.) Dundee, likewise, will be brought to within 59 miles of Edinburgh, and Aberdeen 130 miles, and no sea ferries will have to be crossed. (Cheers.) The construction of the bridge is due to the enterprise of four important railway companies—(1) North British (the bridge is in its district), (2) North Eastern, (3) Midland, and (4) Great Northern, and the design is that of two most eminent engineers, Sir John Fowler and Mr. Benjamin Baker. The contractor was Mr. William Arrol, and the present Tay Bridge and the bridge which I have inaugurated to-day will be lasting monuments of his skill, resources, and energy. (Cheers.) I have much pleasure in stating that, on the recommendation of the Prime Minister, the Queen has been pleased to create Mr. Matthew William Thompson, Chairman of the Forth Bridge Company and of the Midland Railway Company, and Sir John Fowler, Engineer-in-Chief of the Forth Bridge, baronets of

the United Kingdom. (Loud cheers.) The Queen has also created, or intends to create, Mr. Benjamin Baker, Sir John Fowler's colleague, a Knight Commander of the Order of St. Michael and St. George (cheers), and to confer on Mr. William Arrol, the contractor, the honour of a knighthood. (Cheers.) I must not allow this opportunity to pass without mentioning the valuable assistance which has been rendered to the companies by Mr. Wieland, their able and indefatigable Secretary, who deserves especial praise for the admirable way in which he has carried out the important financial arrangements essential in a scheme of such magnitude. (Cheers.) Before concluding, I must express my pleasure at seeing here Major-General Hutchinson and Major Marindin, two of the inspecting officers of the Board of Trade. (Cheers.) Although in this country great undertakings of the kind which we are celebrating this day are wisely wholly left to the enterprise and genius of private individuals without aid or favour from the State, yet, in connection with these particular works, Parliament, I am informed, for the first time associated officers of the Board of Trade with those practically engaged in the construction of this magnificent bridge from its commencement by requiring the Board of Trade to make quarterly reports to be laid before Parliament as to the nature and progress of the works. This most important and delicate duty has been performed by Major-General Hutchinson and Major Marindin, and I now congratulate them on the completion of their responsible duties, which they have carried out in a way that redounds credit to themselves and to the department which they so ably serve. (Cheers.)

The Midland representatives in the Forth Bridge Company at present are Sir Ernest Paget and Mr. W. U. Heygate, who has had a seat on the Board since it was first constituted.

IMPORTANT POWERS ACQUIRED

As long ago as the year 1859 the Lancashire and Yorkshire Company obtained power to swallow up the "East Lancashire" Railway, an independent undertaking extending from the Midland at Colne to Liverpool, and also to Manchester.

The Midland Board saw the importance of maintaining open communication, and therefore obtained running powers for its own engines and trains over the East Lancashire section. On June 1st, 1880, the Lancashire and Yorkshire Company opened its new line from Chatburn to Hellifield, and the Midland opened its new station at Hellifield, and the through traffic was exchanged at that station. However, as the point of junction had been transferred from Colne, the Midland secured powers to run from Hellifield, under which, since August 1st, 1888, the Company works its own engines and trains to the "Exchange" Station at Liverpool, and to "Victoria" at Manchester, and thus, by means of its running powers, round Manchester

to the Ancoats Junction, thence over the Sheffield and Midland joint railway to Marple and New Mills, where once again the Midland Railway is joined. Thus it will be seen that the wisdom of the Midland Board in securing the powers over the East Lancashire in 1857 has now had the effect of giving a complete alternative route extending from Ambergate Junction to Hellifield, where it forms a very valuable feeder to the Settle and Carlisle Railway, and fully accounts for the desire of the Lancashire and Yorkshire Company that the new route to Carlisle should not be abandoned.

Although the Midland Company's main trunk line terminates at Carlisle, it is also interested as joint owner in a piece of joint railway in Wigtownshire and Kirkcudbrightshire extending from Castle Douglas



FIRST-CLASS JOINT DINING CARRIAGE, BUILT 1899
(Midland and Glasgow and South Western).

to Stranraer and Port Patrick. By means of using the Glasgow and South Western route as far as Castle Douglas the Midland obtain access to the joint property at Castle Douglas, and have direct communication with Larne, Belfast, and the north of Ireland.

Originally the Port Patrick Railway Company, as long ago as August 10th, 1857, obtained powers to construct a line from Castle Douglas to Port Patrick and to build a harbour at the latter port. The harbour works were duly formed, but so great was the violence of the sea at this wild and unprotected coast that the works were gradually undermined and completely wrecked. It afterwards became necessary to construct a short branch line to Stranraer in order to make that the point of arrival and departure.

Here at Stranraer, Loch Ryan furnishes a splendidly sheltered harbour, the northern end of the Mull of Galloway forming a great natural breakwater to the fierce force of the Atlantic and the Irish Sea. The Wigtownshire Company, which was formed in July, 1872, constructed a branch from Newton Stewart to Wigtown, and after-

wards to Whithorn. These two companies terminated their existence by virtue of an Act of Parliament as from August 1st, 1885, when the whole of the companies' lines and branches, comprising 82 miles of line, together with all their rolling stock and other property, were transferred to the Port Patrick and Wigtownshire Joint Committee. This body is composed of two representatives from each of the following companies, namely, the Midland, the London and North Western, Caledonian, and Glasgow and South Western Railways, to whom the whole of the property jointly belongs, the capital being provided in equal proportions. All the four companies send their through carriages over this railway, but the locomotive power is provided by the Glasgow and South Western and the Caledonian



THIRD-CLASS JOINT DINING CARRIAGE, BUILT 1899
(Midland and Glasgow and South Western).

Companies, so that the engines of the Midland and London and North Western Companies are never seen on the system.

This Joint Committee, soon after coming into possession, set to work to greatly alter and improve its property; more especially was this the case at Stranraer, where very handsome and convenient transfer stations for goods and passengers, as well as a most commodious harbour, have been constructed. Passengers pass directly under cover from the trains to the steamers, the latter being powerful and well-found vessels fitted with all the modern appliances. At Larne, on the Irish side, an excellent landing-stage and railway station combined has been built, so that splendid through communication is obtained between the Midland system and the whole of the north of Ireland by the shortest sea route.

CHAPTER XXV.

SUGGESTED AMALGAMATIONS AND A SECOND MAIN LINE

ANOTHER very important amalgamation scheme was announced in the newspapers officially on October 20th, 1877, at which date it was stated that "negotiations were pending for the acquisition of the Manchester, Sheffield, and Lincolnshire Railway jointly by the Midland and Great Northern Companies." It appears that Colonel Duncombe, the Chairman of the Great Northern, viewed with apprehension the large amount of capital being jointly invested in the Cheshire Lines and the increased cost for working which the Sheffield Company charged. He therefore came to the conclusion that the best course to follow would be to get rid of the Manchester, Sheffield, and Lincolnshire entirely, and he placed a proposal before Mr. E. S. Ellis, the Midland Chairman, to the effect that the Sheffield Company should be converted into a Midland and Great Northern joint railway.

For ten years previously the Sheffield Company's dividend had averaged only £2 3s. 6d. consequently the offer of 4 per cent. made by the other two companies was a most liberal one. However, at a meeting of the chairmen of the three lines held at King's Cross on November 9th, 1877, Mr. (now Sir Edward) Watkin, on behalf of his Company, demanded another half per cent. Thus the negotiations failed, and the Sheffield Company immediately issued the following statement:—

"The directors of the Sheffield Company announce that they have received a notification from the chairmen of the Midland and Great Northern Companies that the negotiations for the joint purchase of the Sheffield undertaking are at an end. The terms proposed by the Great Northern and Midland were an ultimate rent charge of 4 per cent., which was declined by the Sheffield Board, who proposed in return 4½ per cent., with contingent reserves. The latter terms are now declined by the two companies, and the negotiations initiated by them are at an end."

It will thus be seen that 10s. per cent. was the small "rock" on which these most important negotiations were wrecked. It would certainly have been a most advantageous arrangement for the shareholders of the Sheffield Company had it been carried into effect, but in that case there would have been no Great Central Railway to London to-day, and a vast capital expenditure would have been saved. The shareholders would further have had the benefit of a fixed 4 per cent. investment, which is a vastly different position to that held by the Great Central shareholders at the present time.

If the Askern Junction and Rushton joint railway had been carried out, a very excellent communication would have been formed between the Midland and North Eastern systems; but as the Bill was not sanctioned by Parliament it became necessary in order to carry the constantly increasing traffic to arrange for a new route which should avoid the delays which frequently took place at Normanton. The Midland and North Eastern Companies, on July 16th, 1874, obtained powers jointly to construct a railway about $15\frac{3}{4}$ miles in length to connect the Midland at Wath Road Junction, Swinton, with the North Eastern at Knottingley Ferry Bridge, the Midland Company to have running powers to York and the North Eastern to have similar powers to run its own trains to Sheffield.

This useful link in the chain was opened for goods trains on May 19th, 1879, and on July 1st of the same year passenger traffic commenced, a new service of trains, worked by Midland engines and carriages, running from Sheffield to York. At the present time through carriages are run by this route between Newcastle-on-Tyne and Bristol; also between York and Bournemouth *via* Bath.

In connection with the Swinton and Knottingley route the Midland Company from Milford Junction obtains access for its traffic over the North Eastern rails to Selby and the important port of Hull.

From the early days of the Midland Counties Railway Nottingham was served by a branch line from Trent Junction, but gradually the importance of the town and traffic required a more direct route both to London and the north. At the same period it became evident that the existing main line between Leicester and Kettering was overcrowded with traffic, and it was ultimately decided that instead of widening that portion of the railway to four sets of rails, an alternative main line should be constructed, and the necessary powers were obtained by the Acts of 1872-4. The first section extends from Kettering to Manton Junction, where it forms a communication with the Company's Syston and Peterborough line, and which is used as far as the Melton Mowbray Junction; then the

Melton and Nottingham line was constructed and continued to the eastern end of the station at Nottingham, thus reducing the distance from London to $123\frac{3}{4}$ miles, which, by recent improvements at Bedford and Saxby, has been further slightly reduced.

By means of the then existing line from Nottingham to Radford and the extension from Radford to Trowell a perfectly independent main line was obtained between Kettering and the junction with the Erewash Valley, $5\frac{1}{2}$ miles north of Trent.

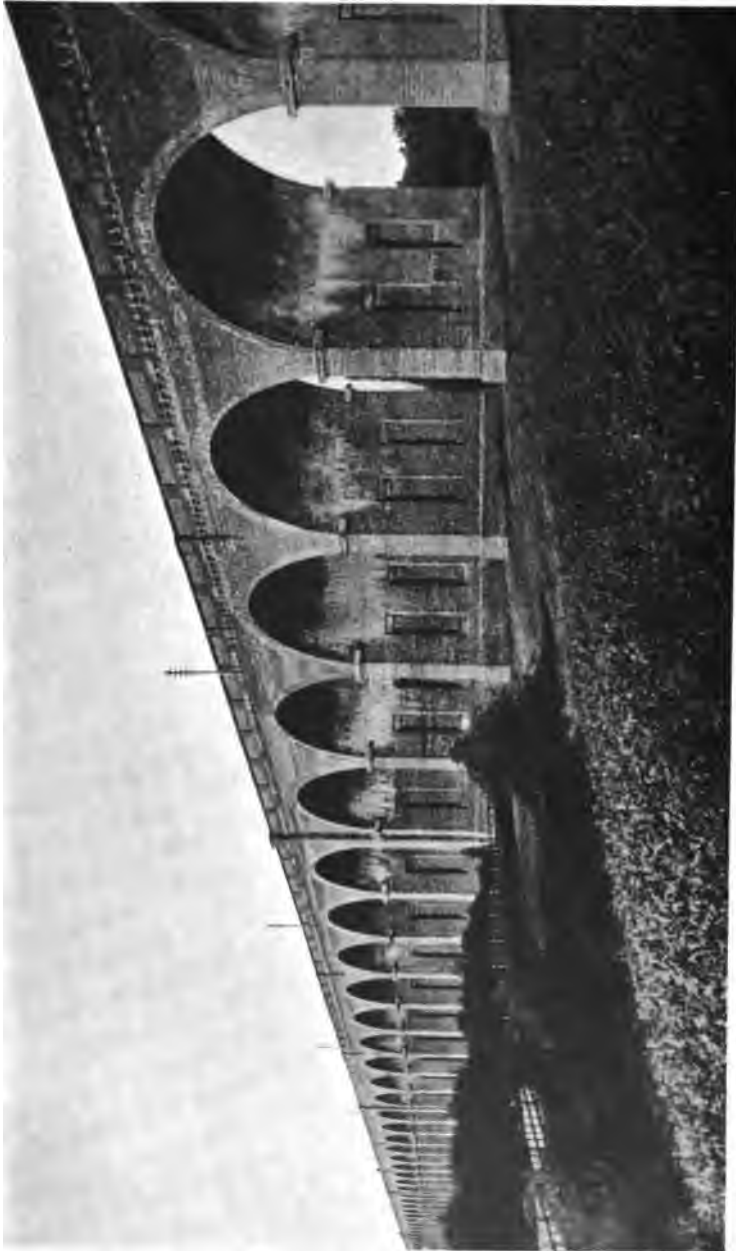
The chief works upon this route are the Corby Tunnel, 1,920 yards, and the viaduct between Harringworth and Seaton Tunnel, which spans the valley of the Welland and is built of red brick, the height being 60 feet and the length about three-quarters of a mile; after which the railway passes through the Glaston Tunnel for a distance of 1,842 yards.

North of Melton Junction there are short tunnels at Asfordby and Saxelby, followed by Grimstone and Stanton tunnels; and near to Nottingham the railway crosses the River Trent by an iron girder-bridge, the three main spans of which are each 100 feet. On December 1st, 1879, the new route was brought into use for goods and mineral traffic, twenty trains per day in each direction running *viâ* Nottingham, Melton, and Manton and Kettering. In February and March, 1880, the Nottingham and Melton and the Kettering and Manton lines were respectively opened for local passenger traffic, but it was not until June 1st, 1880, that Nottingham received the full advantage of the alternative route. However, upon that date a completely new service of express trains was put into operation between London, Kettering, Nottingham, Sheffield, Leeds, and Bradford.

The great value of this second main line has been further enhanced by the fact that it enables the Midland Company at the present time to successfully repel the attacks of the Great Central and the Great Northern Companies upon its through Nottingham traffic, which it might have experienced some difficulty in doing *viâ* the Trent route.

Within the triangle at Trent Junction the Company, on May 1st, 1862, opened the Trent Station simply as a convenient centre from which passengers could journey. Every passenger train from either London, Leeds, Nottingham, or Derby ran to Trent, and the various portions or through carriages were then properly arranged for their destination.

This arrangement, after continuing for a number of years, had to be greatly modified, and with the opening of the Nottingham, Manton, and Kettering route to London and the necessity for running the Manchester expresses with a minimum of stoppages, the Trent Station has now become of secondary importance.



HARRINGWORTH VIADUCT
(Kettering and Manton Line).

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Communication with the district roughly embraced between Peterborough, Bourne, King's Lynn, Yarmouth, and Cromer was originally provided by a number of independent railway companies, who each dealt with a particular portion. For instance, the Peterborough, Wisbech, and Sutton Bridge Railway dealt with one district, the Midland and Eastern Railway with the section from Bourne to Spalding and Lynn, the Lynn and Fakenham Railway, which connected these towns, the Yarmouth Union Railway, and the Yarmouth and Norfolk Railway. All these what may be called subsidiary lines were united as the



SHERINGHAM

(Midland and Great Northern Joint Railway).

Eastern and Midlands Railway Company by an Act of August 18th, 1882. This Company, amalgamated in its turn by virtue of the Midland and Great Northern Companies' joint Act, was transferred from July 1st, 1893, to the Midland and Great Northern Railway Companies jointly. The total length of the railway thus acquired was 188 miles, the capital being provided by both partners in equal proportions. The traffic in this case is managed by a Board of six directors, three from each system. There are seventy engines, and these are controlled by Mr. S. W. Johnson, the Midland Locomotive Superintendent; they are exactly Midland in design and working parts, but are painted yellow and carry the letters "M. & G.N. Jt."

To save the construction of a duplicate line to Lowestoft the joint committee arranged with the Great Eastern Company to convert a portion of its railway into the Norfolk and Suffolk Joint Railway, thus giving the Midland uninterrupted communication to Lowestoft.

The joint branch line from Melton Constable to Sheringham and Cromer gives access to a very beautiful part of the Norfolk coast, which is yearly attracting a large number of visitors. By means of the Saxby and Bourne line, constructed by the Midland Company, the route to the Norfolk coast is considerably improved and shortened. The building of a new station at Saxby and the increase of the radius of the well-known Saxby curve have proved very advantageous.

One of the most remarkable illustrations of the fact that a line which is entirely or almost entirely local in its character and in its traffic is comparatively valueless and unimportant, yet when it is combined with or made a portion of a through route it at once becomes of great value and importance, is furnished by the Somerset and Dorset Railway. Originally there was a Somerset Central Railway Company and also a Dorset Railway Company, each dealing with practically only local traffic. These two lines—the Somerset, a broad-gauge system, incorporated June, 1852, and the Dorset, a narrow-gauge system, incorporated July, 1856—were amalgamated as the Somerset and Dorset Company, with 66 miles of lines. The amalgamated Company, with a view to forming a junction with the Midland at Bath, constructed a connecting link 26 miles in length from Evercreech Junction to the Midland terminus at Bath. This extension was opened for traffic on July 20th, 1874. The separate existence of this Company, however, speedily came to an end, for on November 1st, 1875, the line was leased for a period of 999 years jointly to the London and South Western and Midland Railway Companies. Thus it came about that by means of the Midland branch from Mangotsfield to Bath, the jointly leased line from Bath to Poole, and the running powers from Poole to Bournemouth, the Midland line stretches in an uninterrupted route right through the whole of England from Carlisle in the north to Bournemouth in the south. The working of this leased line is one of the very few instances in which the whole of the traffic is dealt with by engines which are owned by the joint committee who manage the line. There are sixty-eight engines, under the control of the Locomotive Superintendent of the Midland Railway, and the committee is formed of three directors from both the Midland and South Western Companies.

The Dore and Chinley branch, which unites the Midland, Chesterfield, and Sheffield direct line at Dore with the Ambergate and

Manchester line at Chinley, was only constructed after long efforts. The district traversed is a picturesque one, and many sanguine persons thought that the line would be a valuable one for holiday traffic, especially from Sheffield; but the wild character of the Peak caused engineers to pause on the ground of the cost of construction. Holiday traffic, moreover, is not at all sufficient to make a line pay, and it soon became evident that to be at all remunerative it must form a link in through traffic. In 1884 an Act was passed to form an independent company to make the Dore and Chinley line, but the scheme did not

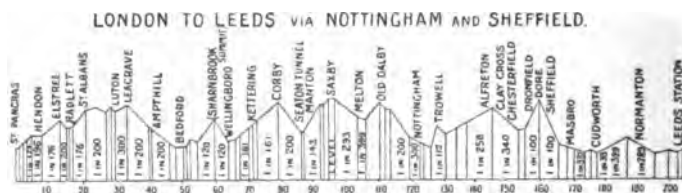


EDALE
(Dore and Chinley Line).

attract sufficient financial support, and but for the intervention of the Midland the line would never have been formed. The Midland saw that the line would give communication from Sheffield to Liverpool, Manchester, and also to Buxton, as well as providing communication from Nottingham and Chesterfield to the Peak district. It also provided an alternative route to Manchester in the event of any obstruction on the line between Ambergate and Chinley, and it completed four sets of rails from London to Chinley, either by quadruple lines or by alternative routes. It also opened up pleasure resorts in a district not previously touched by any railway. The Midland obtained

parliamentary powers in 1888, whereby the scheme was vested in the Midland Railway Company, who at once proceeded with the construction. The line is 20 miles 8 chains long, with two short curves, one at each end. The work was of a very heavy character, and necessitated two of the longest tunnels on the Midland system, namely, the Totley Tunnel, 6,226 yards, and Cowburn Tunnel, 3,727 yards. The gradients also were very severe, including long stretches of 1 in 100. The most trying piece of the line was that from near Hope Station to the mouth of the Cowburn Tunnel, a distance of $5\frac{1}{2}$ miles. The Totley Tunnel is of such exceptional length that there is specially devised electrical communication in addition to the block system, whereby drivers, firemen, guards, or platelayers are able to communicate with the signalmen at each end of the tunnel in the event of any accident or obstruction requiring the stoppage of traffic. In the event of anything necessitating this arising, all that has to be done is to cut or break a special wire, when the alarm bells in the signal-boxes will ring and all traffic will be stopped. The same arrangement is also carried out in Cowburn Tunnel. The line, which was a very costly one to make, was completed and opened for goods traffic in the autumn of 1893, and on June 1st, 1894, through express trains were run over the line from Sheffield to Manchester. The local passenger traffic commenced the following month. Messrs. Parry and Story were the engineers for this line.

The last railway purchased by the Midland was that of the Barnoldswick Company, which was formed on August 12th, 1867, to make a local line two miles in length from Barnoldswick to Barnoldswick Junction to join the Midland, Skipton, and Colne branch. The Midland agreed to work the line in 1867, and it was opened on February 13th, 1871. It was vested in the Midland and the small company dissolved by the Midland Act of 1899.



CONTOUR OF THE SECOND MAIN LINE *via* MANTON, NOTTINGHAM, AND SHEFFIELD.

CHAPTER XXVI.

NEW WORKS

THE over-sea traffic of the Midland has constantly grown in magnitude and importance, and the value to the system of having its own direct outlets for the goods and minerals from the towns and places served by the system cannot be overrated. By this means it is enabled to collect its own traffic, convey it to the quayside on its own wagons, and tranship it, under the direct control of its own officials, by its own servants, to have full and absolute control of its own quays, berths, and the management of a port of its own, thereby avoiding delays, demurrage, and many other disadvantages. To have the power, the space, and the means for extending and amplifying the siding, quay, and dock accommodation from time to time, as traffic is developed or attracted to a port, is a privilege of the most vital concern. When it is considered how many of the great centres of industrial and mineral activity are to a large extent dependent upon the Midland Company for communication between, for instance, Lancashire, Yorkshire, Derbyshire, Nottinghamshire, Leicestershire, and London itself, both to and from all parts of the world, the future possibilities in the way of development are of the most important character. And it is to this end, as well as to meet a great deficiency at Morecambe, that the great harbour scheme and works at Heysham have been entered upon, and which are at the time of writing in a very advanced stage.

At Morecambe steamers drawing 14 feet and over have only four hours available each tide in which to enter or depart from the harbour. The great expansion in the size of passenger and freight-carrying steamers rendered it more and more desirable, if not absolutely essential, for the Midland to have control of a port with infinitely better accommodation in waterway and wharfage. Heysham Harbour would not be a practical undertaking but for one very fortunate circumstance. In the Bay of Morecambe, extending right over the mouth of the new harbour up to a point where the River Lune falls into the sea, there is a great depression or valley in the bed of the bay which is

known as Heysham Lake. The depth of this ocean valley ranges from 24 feet to 156 feet, and at the harbour entrance, even at the lowest spring tides, when the water has receded to its minimum limits, there is always a depth of water of 36 to 42 feet. Now the scheme of the engineers was this: To run out from the cliffs north and south of the harbour two great embankments or breakwaters each 900 yards long, and forming together a semi-circular or crescent shape, with an aperture or opening 100 yards wide at the apex. Each of the breakwaters terminates in a very massive concrete head, and their site is 300 yards within the low-water mark. By closing the aperture between the heads of the two breakwaters whilst the works are in progress there is an inclosure of about 180 acres in extent, which, when the banks were completed, was reduced to about 140 acres. At the time of writing a great army of men, inhabiting two separate and specially constructed "colonies," or temporary townships, were engaged in widening, strengthening, and completing these great breakwaters, and in excavating the inclosed land for the harbour works. Four miles of double line, forming the new Heysham branch of the Midland, have been completed, whilst outside what will hereafter be the harbour entrance a temporary jetty has been constructed for the use of the steamers and barges conveying concrete and materials for the new works. The two great breakwaters were commenced in November, 1897, and they were completed and united by the intervening dam on March 17th, 1899. They were formed in the ordinary way—by tipping earth, and their slopes towards the sea were protected by large pieces of rock from the excavations, and afterwards by the permanent stone facings from Barrow and Horsforth. The harbour proper will, at the outset, be 44 acres in extent, leaving the remainder for future extensions. It will be 800 yards long, 300 yards wide, and down its centre is a pier 300 yards in length. There will be wharfs both north and south, and all will be connected by sidings communicating with the new branch and the various buildings, etc., required for the storage of goods. Twelve miles of temporary railway were used in the excavations, eleven steam excavators, eleven locomotives, two steam pile engines, six steam pumps of great power, and other plant in proportion, together with large cement stores, repairing sheds, etc. The breakwaters keep the temporarily sealed harbour free from the tidal action of the waters, and the powerful pumps, operating in deep sumps formed in the rock, to which all the water was drained, kept the workings clear.

When the piers and harbour have been completed, and all is in readiness, the 100 yards dam which connects the two breakwaters will be removed at low tide—somewhere, it is expected, towards the end of

1901—and the waters of the bay will flow into the harbour. Then steam-dredgers will cut a deep channel 450 yards long between the harbour and the bed of the Heysham Lake or Valley, and thus there will be a free and open waterway for the largest steamers available at all stages of the tide.

The work is a vast one, and it has required great engineering skill to carry it out successfully. At the period when the sea embankments were erected and the tidal water excluded from the site of the harbour serious difficulties were reported to have been encountered, but it turned out that the only obstacles met with were those which had been foreseen and duly provided for by the engineers; and they were only such



MANSION HOTEL, HEYSHAM TOWER.

as were likely to be met in so big a scheme, for these works may be said to rank second to none in the kingdom for commercial purposes carried out by one great company.

The Midland Company have already one very important adjunct to the new port of Heysham in full operation, namely, what we may call the Mansion Hotel, at Heysham Tower, which is delightfully situated within a mile of the new harbour.

The whole of the new works have been and are being executed under the supervision of the responsible engineers, Mr. J. A. M'Donald, who has associated with him Mr. G. N. Abernethy; and Messrs. Price and Wills, of Westminster and Manchester, are the contractors.

CHAPTER XXVII.

THE LOCOMOTIVE WORKS AT DERBY

WHEN the three companies were merged in one Midland Company in 1844 each of them had its own locomotive shops established, and all adjoined one another at Derby, which was the great connecting centre and the joint passenger station for all three. At that period the locomotive and carriage works were combined, and they occupied altogether a site of $8\frac{1}{2}$ acres, of which the buildings covered $2\frac{1}{2}$ acres. In 1873 the carriage and wagon works were placed on a separate basis and new works constructed on another estate, thus leaving the old site and the adjacent land available for additional works necessary for locomotive building and repair. The present locomotive works alone occupy an area of over 80 acres, and there are buildings covering 20 acres. The works are almost a town, and the employees certainly form a community by themselves. The site is somewhat of an oval shape, 1,500 feet in width and 3,500 feet in length, and is bounded on one side by the Derby Station buildings and offices, the main line to London, and on the other side by the Derby Canal.

It is very difficult to give an adequate idea in words of what these stupendous works are, and of the great and manifold operations carried on within them. Some parts resemble broad thoroughfares intersected by lines of rails, and the visitor is puzzled to find his way about from building to building. There are over 5,000 skilled workmen employed, earning about £6,000 per week; about fifty new engines are turned out every year; 130 are provided with new boilers; and about 900 engines undergo repairs during the twelve months.

The most striking features of the buildings are their lofty roofs; they are admirably heated, lighted, and ventilated, and they are almost entirely of one storey, the heavy character of the operations necessitating their being conducted on the ground floor. Electricity and gas are the artificial illuminants, both of which are provided by the Company's own plant. The works also embrace a laboratory in charge of a fully qualified chemist and his assistants, drawing offices for locomotive work

and machine tools, millwrights' department, stores, and photographic studio. The principal workshops and buildings which come under the immediate control of the Works Manager are as follows: Drawing offices, pattern shop, foundry, smiths' shop, boiler shop, wheel and axle shop, tender shop, machine shop, erecting shop, and paint shop.

To commence the construction of a set of new engines of, say, ten or more in number, if they are for goods traffic, they will be of a fixed standard pattern, the main features of which are six coupled wheels of 5 feet diameter with 18-inch cylinders with 26-inch stroke, which have been found so effective for their work that there has been very little alteration in recent years.

But with regard to passenger express engines a very different state of affairs prevails. The Locomotive Superintendent becomes aware, through the reports of his assistants, that engines of greater power are required for working certain traffic in consequence either of increase of speed being required or the load on certain trains becoming heavier. Another object in view in the construction of larger engines is as far as possible to avoid double-engine running. The Locomotive Superintendent has to decide and determine what are the best means of meeting the requirements of the traffic and overcoming the difficulties indicated.

Locomotives of greater power can be obtained either by an increase in the size of cylinders or higher working steam pressure or by smaller driving wheels, or it may be by the combination of all three; or again, the object desired may be best secured by having large single driving wheels, larger cylinders, and higher pressure; or by a new utilisation of four coupled driving wheels.

The system or principle which he intends to adopt depends very greatly on the gradients of the lines—engines with single driving wheels being chiefly employed on the more level portions and those with coupled wheels on the more severe gradients—for the dictum of George Stephenson, unfortunately for locomotive superintendents, that no gradient should exceed that of 1 in 330, or 16 feet in a mile, has long been discarded owing to the pressure of circumstances. Now locomotive superintendents have to provide power for carrying heavy loads at high speeds up gradients as steep as 1 in 90.

In determining the mechanical means which are to give the increased power demanded, very careful consideration is involved as to the nature of the traffic, the route to be traversed, and the length of the journey; and it is in the practical mastery of this problem that the superintendent achieves the best working results for the capital expended. It is this practical test in actual working and the more perfect utilisation of

the forces at their command that decides everything. The engine, to be a success, has to do what it was designed to do, and it must convey the traffic more speedily or more economically than its predecessor.

Of course, this is only a continuation of the steady, but none the less wonderful, stream of progress which has been witnessed from the time of the earliest locomotives. As trains have grown in length and increased in speed and covered greater distances without stopping, so locomotives have had to be developed in weight, size, and power.

Thus, on the formation of the Midland Railway in 1844, a locomotive with its tender, in working order, had reached a stage of development till they weighed about 25 tons complete. This showed an increase from the earliest locomotives on the Leicester and Swannington Railway, when they weighed: engine, $9\frac{1}{2}$ tons; tender, $3\frac{1}{2}$ tons; or a total of 13 tons weight. So that the size and weight of locomotives had been practically doubled in the twelve years from 1832 to 1844.

Again, since 1844 the increase has been continuous until the middle of 1900, when the weight of the most modern Midland locomotives, such as that shown at the Paris Exhibition in 1900, fully loaded, reaches a total of 100 tons, or a four-fold increase in fifty-six years.

But it is necessary to point out that this raises altogether another set of problems and considerations, which may be put very briefly in this way. The lines constructed in 1844, with all the necessary bridges, culverts, etc., were only required to carry engines of 25 tons. But the early engineers were wise in their generation, and made a great margin of allowance, and so constructed the works that they would carry much greater weights than they had any idea of carrying at the time they were built.

These circumstances, and the gradual relaying and rebuilding of bridges, etc., on the same wise principles, have given locomotive superintendents a much freer hand than they would otherwise have had. Because not only is there the individual increase in the weight of each engine, but provision has also to be made for the maximum weight possible by having two of the heaviest engines attached to the train running in one direction, and two similar engines attached in like manner to another train travelling in an opposite direction, and all four engines rushing on to one viaduct at the same instant, when a fourfold increase in weight would have to be sustained.

This is where the happy combination and co-operation comes into play between the locomotive department and the engineers' department of the way and works. The superintendent of the locomotive department must only construct such engines as the road will carry; and on the other hand the engineer has to so strengthen and improve



WHEEL SHOP, DERRY WORKS.

the permanent way, etc., that it will have an ample margin of strength after sustaining any strains which may be thrown upon it.

A design having been decided upon, the necessary drawings are prepared, which are forwarded to the works manager, together with the order for the number of engines to be built.

The works manager is then in a position to know exactly every nut, bolt, plate, casting, and every part that will be necessary, and he instructs the foremen of the various shops accordingly. The patterns are prepared, and the necessary castings of brass, steel, or iron, as the case may be, are made in the foundry; and when complete are forwarded to the machine shop, where they are turned, bored, planed, and trued exactly to proper size.

The wrought-iron work is, of course, forged in the smiths' shop. The boiler shop, like all the others, is filled with many special machines and special tools of all kinds. The boiler, fire-box, and smoke-box are all furnished by this department complete, and the boilers are tested with hydraulic pressure and with steam before leaving this department.

The wheels, axles, and springs are all prepared in special shops, and are subjected to the severest tests and the closest examination before being sent out for use.

When the whole of the parts are completed they all gravitate to the erecting shops, where they are all put together: first the frame plates, then the stays between them, then the cylinders, next the boiler and fire-box complete are lifted and lowered into position; then the working parts are put in, and powerful cranes lift the completed monster into the air and deposit it upon its wings of movement—the wheels and axles—and it becomes almost a living thing.

Of course, before the engine is exposed to public gaze it is taken into the paint shop, has a tender coupled up, and is put through a number of preliminary trials, after which it is placed in the effective list of engines in a given district.

But before an engine does any work or running, either preliminary or otherwise, it is placed in the balances and weighed up, so that the weight not only of the engine as a whole, but the exact weight which is sustained by each wheel, can be set down to a pound.

It is of the most vital importance that a locomotive should be equally balanced, so that the weight resting on the wheels on each side shall be equal, and also to see that extra weight of the desired amount rests upon the driving wheels, to ensure that when running the necessary adhesion between the driving wheels and the rails will be obtained.

This weighing up of the load resting on each individual wheel

demonstrates the accuracy with which the whole engine and its arrangement of parts has been constructed.

A most ingenious weighing machine has been designed for this important work, and may be said to consist of a divided weighing platform, which practically amounts to a number of independent weighing machines, which give a separate register of the weight resting on each individual wheel; and thus the designer of the locomotive has the surest proof of the exact distribution of the weight which he intended to create.

Having been subjected to many coatings of paint and varnish, it is sent forth to career to and fro in the service of man.

It would be obviously impossible to describe here these works in technical detail; but a few dimensions may prove serviceable and interesting. There are two iron foundries, one 250 feet by 90 feet,



STANDARD EXPRESS ENGINE. SINGLE DRIVING WHEELS.

and another 215 feet by 45 feet. The pattern shops are 180 feet by 42 feet; the smiths' shops, of which there are two, contain seventy-five fires and ten steam hammers; the boiler shop is 270 feet by 45 feet; the wheel and axle shops occupy four bays, each 270 feet long by 45 feet wide, and each bay is provided with travelling and walking cranes of great capacity, with hydraulic presses, one of which exerts a force of 470 tons; the fitting shops of six bays are each 450 feet long, with nearly 500 machines for all purposes, and forming part of an extensive building 450 feet square; the two erecting shops, each 450 feet by 50 feet, are capable of accommodating 108 engines. In addition, there are tender shops of great capacity, and very powerful machinery of the most efficient character is provided wherever required.

The cost of a locomotive varies according to circumstances, including its design, the number to be built at one time, the price of coal, materials, and labour; but, broadly speaking, it may be estimated at from £2,500 to £3,000.



FITTING SHOP, DERBY LOCOMOTIVE WORKS.

TO THE
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Having thus briefly sketched the processes of locomotive building, it now becomes necessary to shortly indicate the chief characteristics of the various types of modern Midland engines.

During the whole period covered by the Company's existence the Midland locomotives have always been well abreast of the times and of the work which they were called upon to perform ; and it is safe to say that at the present moment the leading types of engines which have been designed and constructed by Mr. S. W. Johnson, at the Company's works at Derby, are equal to the finest locomotives in any part of the world. They are inferior to none either in speed, in the load they convey, in their ability to ascend heavy gradients, as well as in their economy in working and in general efficiency.

However much locomotives may vary in technical detail as well as in outward appearance—and these variations are of extreme interest to locomotive engineers and railway specialists—it yet remains true that the general principles of all are more or less closely allied to one another. And, however widely their construction and dimensions may differ, all these variations or special arrangements are mere devices for the better and more efficient utilisation of their power. The four great points in a locomotive are, of course :—

1. The boiler in which the steam is generated.
2. The cylinders in which it is utilised to force the piston alternately from end to end, the length of the stroke being regulated by the throw of the crank according to the length of the cylinder.
3. The throw of the crank of the axle of the driving wheel ; and
4. The size of the driving wheel.

Hence the four important questions regarding all locomotives are : first, the diameter of the cylinders ; second, the length of the stroke ; third, the diameter of the driving wheels ; and fourth, the pressure of steam in the boiler. It is upon these points that the whole of the changes in locomotive construction are rung ; they are the keynotes which dominate the whole ; and these particulars being given, all the rest, to a practical engineer, becomes more or less a mere matter of detail.

Of course there are other questions which arise on different railways, such, for example, as to whether locomotives should have their cylinders inside the frame, as in all the Midland, or outside, as in American and other types. Further, the class of coal or fuel which can be secured in different localities has also to be carefully taken into consideration ; and modifications may be considered necessary in the construction of

fire-boxes and boiler-tubes to meet the particular circumstances. Then there are other locomotives, of which the Midland own a number, which run on the London underground railways, which are not allowed to discharge any steam in the tunnels, and which are therefore provided with special condensing apparatus by means of which the steam, instead of being discharged up the chimney into the atmosphere, is turned into the cold-water tank and condensed.

But notwithstanding all these variations, the tendency of all railway companies has for a long time been to adopt certain standard patterns, which gives the advantage—a very great one—of all parts being interchangeable. Each locomotive superintendent, it is true, has his own views and his own designs, and this has led to the construction of engines of great variety, which the superintendents believe to be the most advantageous for their own particular railways. This has brought new ideas to the front, and has promoted the efficiency of locomotive power generally, because each system and every new principle has been brought to the test of practical experience.

In the early days of English railways the lines were made comparatively straight, and engines with three rigid axles ran steadily and with great advantage; whereas in America the early lines had considerable curves, and therefore bogies were of great use in giving security in passing over them. But the bogie which forms so conspicuous a feature in modern locomotives, in dining cars and in long carriages, was an English invention; and it was actually applied to the locomotive known as "Puffing Billy," built as early as 1813, and rebuilt with bogies in 1815; also, in 1833, R. Stephenson and Co., of Newcastle-on-Tyne, constructed an engine known as "Davy Crocket" which had a leading bogie, this engine being exported to America. An imported American locomotive with a leading bogie also opened the first section of the Birmingham and Gloucester Railway in 1840. But it was undoubtedly the American experience that practically demonstrated the great utility and value of the bogie principle. It gives greater freedom in running, as well as equalises the weight on the four front wheels, and indeed it is now easy to see that very few more passenger engines will be built in Great Britain without a bogie.

Mr. Johnson was one of the first to recognise the value of the leading bogie for fast passenger engines, and its reintroduction, so to speak, to this country is the direct outcome of the American results.

At the present time the Midland are constructing six distinct types of engines for their traffic, viz. first, an express bogie engine with single driving wheels; second, bogie express with four coupled driving wheels; third, for local passenger traffic there are bogie tank engines

with four coupled wheels in front; fourth, standard goods engines; fifth, tank engines for local goods traffic—practically a goods engine without a tender; and sixth, small special engines on four wheels, which go round very sharp curves in dock or brewery sidings.

Mr. Kirtley constructed the first engine built at the Derby works in September, 1851. He also built express engines having "single" driving wheels, 6 feet 6 inches diameter, also coupled engines, some 6 feet 2 inches, and forty-eight others (the "800" class) 6 feet 8½ inches diameter, and goods engines with six coupled wheels of 5 feet 2 inches, but none of these can be considered "modern," although it must be mentioned that all the "800" class, built over thirty years ago, are still doing good work.

In 1876 Mr. S. W. Johnson had the first of his bogie express engines ("No. 1312") placed upon the line. This design consists of a four-wheeled leading bogie and four coupled wheels. The cylinders are placed inside, the framing and bearings being also inside. The dimensions of the first type of coupled bogie engines were 17½-inch cylinders, 26-inch stroke, coupled wheels 6 feet 6 inches, and having a boiler pressure of 140 lbs. At various times these dimensions have been increased, until the one illustrated by engine "No. 63" has 19½-inch cylinders, 26-inch stroke, coupled wheels 7 feet, and the boiler pressure has been increased to 170 lbs. The total weight of this engine with its loaded tender is nearly 100 tons.

In 1887 Mr. Johnson placed the first of his "single" express engines upon the line. These have a leading bogie and a single pair of driving wheels. The frames are double and the cylinders inside. The first eighteen engines had driving wheels of 7 feet 4 inches diameter and cylinders 18 inches diameter.

"No. 1853," built and sent to the Paris Exhibition of 1889, had driving wheels 7 feet 6 inches and cylinders 18½ inches; of this type forty-two engines were constructed.

In 1893 the "179" class was built, having cylinders 19 inches diameter and piston valves placed under the cylinders, the driving wheels, as before, being 7 feet 6 inches.

So satisfactory did the whole of the seventy "single" engines prove that in 1896 and 1897 Mr. Johnson took another most important step in the direction of progress. He constructed five more engines, the "115" type, having 3 inches larger driving wheels, ½ inch more cylinder, and 10 lbs. more steam pressure. The tender runs on six wheels, and carries 3,500 gallons of water and 4½ tons of coal.

The magnificent locomotive of the Midland, "No. 2601," and named the "Princess of Wales," the first of a class of ten built at Derby in

1900 and shown at the Paris Exhibition, is a further development of this type of "single" engine. The cylinders, stroke, and size of driving wheels remain unaltered. The great features of these engines are the increased size of the boiler, an enlarged fire-box, which gives increased heating surface, and a steam pressure of 180 lbs. The engine is of greater weight, and the tender, instead of running on six wheels, as in previous passenger engines, is provided with two four-wheeled bogies, and carries no less than 4,000 gallons of water. Ten of these engines are at work on the fastest and heaviest expresses.

The table opposite shows at a glance in historical order the leading types of engines on the Midland line at various periods, together with the details of the standard pattern express engines now being manufactured by the Company at the Derby works.

It will be observed from the table of selected locomotives, and it is a fact worthy of mention, that as long ago as the years 1839 and 1840 the Birmingham and Gloucester Company, now a portion of the Midland, purchased several locomotives from an American firm of builders in Philadelphia, and those engines were found to give satisfactory results upon English rails. A period of sixty years has now elapsed, and history begins to repeat itself. The circumstances attending the re-ordering of American locomotives were explained by Sir Ernest Paget to the shareholders of the Company on February 17th, 1899, as follows: He said that they would no doubt have seen that they had purchased some engines in America, and as that was a new departure some explanation would be interesting to them. He might say that from the first they would very much have preferred purchasing home-made goods, whether engines or anything else, if possible. He might say, too, that the question of cost did not enter at all into their calculations when they asked for tenders for engines from over the water. Their train mileage had been increasing very rapidly of late years, the mileage of 1898 showing an increase of more than two millions of miles. Their Locomotive Superintendent, Mr. Johnson, had for some years been impressing upon them that they worked their engines too hard. He believed that if Mr. Johnson could have his way he would have seventy-five per cent. of their engines in steam. As it was, ninety was very much nearer the number in steam, so that they saw at once that there was no margin. He would tell them how they were situated as regarded the ordering and the delivery of engines. They had at present 170 ordered in England. They commenced in December, 1897, and the first engines were to be delivered in July, 1898, so many per month following. If that delivery had gone on properly they would now have had forty-eight of the engines, but they

PARTICULARS OF SELECTED LOCOMOTIVES, 1832 TO 1901.

Railway.	Engine.		Designer.	Description of engine.	Cylinders		Diameter of wheels			Steam press. p. sq. in.	Weight in working order.	Weight of engine and tender.	Capacity of water.	Weight of loaded tender.	In working order.	Weight of engine.	Loaded.	Weight of tender.	In working order.	Weight of engine and tender.
	No.	Name.	Date.		Diameter.	Stroke.	Leading or bogie.	Driving.	Trailing.											
Leicester and Swannington Do. Do. Do. Birmingham and Gloucester. Midland	1	"Comet"	1832	Four wheels coupled	12	16	5 0	5 0	—	50	9 47	3 50	400	3 50	10 47	800	39 70	12 97	12 97	12 97
	3	"Samson"	1833	Do.	14	18	4 6	4 6	3 6	50	10 44	4 0	500	4 0	10 44	800	34 50	14 44	14 44	14 44
	6	"Atlas"	1834	Six wheels coupled	16	20	4 6	4 6	4 6	60	17 0	4 50	650	4 50	17 0	600	21 50	21 50	21 50	21 50
	—	"Philadelphia"	1840	Single driving wheels, and four-wheel bogie	12½	20	2 6	4 0	—	63	10 0	8 00	600	8 00	10 0	600	18 00	18 00	18 00	18 00
Do. Do. Do. Do. Do. Do. Do. Do.	26	—	1847	Single driving wheels	15	20	4 0	6 0	4 0	120	24 05	15 65	800	15 65	24 05	120	39 70	39 70	39 70	39 70
	60	—	1848	Do.	16	20	3 6	6 6	3 6	120	21 45	13 05	800	13 05	21 45	120	34 50	34 50	34 50	34 50
	800	—	1870	Four wheels coupled	17	24	4 0	6 6	6 6	140	36 00	26 20	2000	26 20	36 00	140	62 20	62 20	62 20	62 20
	1312	—	1876	Four wheels coupled, bogie	17½	26	3 3	6 6	6 6	140	40 30	32 55	2900	32 55	40 30	140	72 85	72 85	72 85	72 85
Do. Do. Do. Do.	1757	"Beatrice"	1886	Four wheels coupled, bogie, Gold medal, Saltaire Exhibition.	18	26	3 6	7 0	7 0	160	42 70	36 45	3250	36 45	42 70	160	79 15	79 15	79 15	79 15
	1853	—	1889	Single driving wheels, bogie. Grand prix, Paris	18½	26	3 6	7 6	4 4	160	44 15	36 45	3250	36 45	44 15	160	80 60	80 60	80 60	80 60
Do. Do. Do. Do.	116	—	1897	Single driving wheels, bogie	19½	26	3 9½	7 9	4 4	170	47 10	38 35	3500	38 35	47 10	170	85 45	85 45	85 45	85 45
	2601	"Princess of Wales"	1900	Do.	19½	26	3 9½	7 9	4 4	180	50 15	50 60	4000	50 60	50 15	180	100 75	100 75	100 75	100 75
Do. Do. Do. Do.	2610	—	1901	Grand prix, Paris... Four wheels coupled, bogie	19½	26	3 9½	—	—	180	—	—	4000	—	—	180	—	—	—	—
																				(now under constr action)

had not got one. The last order they gave was in December, 1898, for twenty engines at a very large cost, but they could not get even the promise of one engine for fifteen months, and that order would not be completed until May, 1900. Engines were a necessity to them; they must have them; so they determined to try two firms in America—the Baldwin and the Schenectady. They gave orders for ten engines in each case, the delivery in one instance being in ten weeks from the time all the drawings and so forth were received, and in the other case the shipment from America was to be in four months. So that they saw that, whereas in England they could not get an engine in fifteen months, in America they could get twenty in four. They needed no further justification than that, and, thinking so, they had doubled the order to one of the firms. The engines would be of the “Mogul” type; they would be essentially American, but with certain alterations which their Superintendent thought necessary. They would have copper fire-boxes and copper tubes in the place of steel ones, which were used in America. There were other minor details, but the engines would practically be American, and they would be very interesting to the Midland Company, because they were of the same power as their own. It would therefore be interesting to them to see the engines running by the side of their own, because Mr. Johnson, and he hoped every one of the staff, had determined that they should have fair play from beginning to end.

These engines have been delivered, thirty by the Baldwin and ten by the Schenectady works, and they are now at work in the ordinary way, giving satisfactory results.

The first question which will naturally be asked is, “What are the special points of difference between these new American engines and the ordinary English locomotives for goods traffic?” Without entering too much into technical details, it may be summed up in a few words that the English goods engine has six wheels coupled, and its cylinders are placed inside, that is, between the frames and out of sight, whereas the American goods engine, known as the “Mogul” type, has eight wheels, the leading pair being small and capable of turning in the required direction when passing round curves, followed by six wheels of 5 feet diameter coupled together, and the cylinders are placed outside. At first sight it is probable that Englishmen will be struck with the amount of their “machinery”; as a fact, there are no more working parts, but those which do exist appear upon the outside, and can be plainly seen. In English goods engines the upper parts of the wheels are covered over by splashers; but in the American engines the driver’s foot-plate or “running-board,” as it is termed in America, is high up above the

six coupled wheels of 5 feet diameter. Upon the boiler are placed what at first may appear to be two domes: one of these, the nearest to the chimney, is, however, a circular box to contain sand, to be applied in front of the driving wheels to prevent slipping in case of wet or greasy rails, and the second dome only is used for the purpose of obtaining dry steam from the boiler for conveyance to the cylinders. One of the most important features in the new engines is the American cab. When the early locomotives for the Liverpool and Manchester, Leicester and Swannington, and other pioneer railways were built no protection whatever was given to the driver and fireman against wind and rain. Gradually a weather-board and a little shelter became usual, but for some reason there seemed to be an opinion that if a driver and fireman were protected from the weather they would not perform their duties so well. The opinion of the writer is, however,



ONE OF THE BALDWIN ENGINES, BUILT 1899.

quite in the opposite direction, for, when travelling on American engines at speeds of over 80 miles an hour, the drivers, although well sheltered and provided with a comfortable seat, performed their duties with the greatest care and efficiency. Indeed, there can be no question that a driver placed in a convenient sheltered cab is far more likely to give attention to work than a man wet through with rain and snow and half frozen.

To give an idea of the power of the new Midland engines, of which "No. 2501" was the first to be sent from the Baldwin works, it is only necessary to say that there are two cylinders of 18 inches diameter by 24 inches stroke, and six coupled wheels of 5 feet diameter. In those dimensions there is nothing very surprising, but when we come to consider the boiler the facts unroll themselves. The heating surface of the fire-box is 125 square feet; of the tubes, 1,247 square feet; total, 1,372 square feet; and the boiler working pressure is 160 lbs. per square

inch. The tenders are of the American pattern, placed upon two four-wheeled bogies, and carry nearly 4,000 gallons of water. One very important point about these engines is that they are built to "standard" patterns. If an accident should occur or a part become broken, it is only necessary to telegraph or write to America giving the name and number of the part required, and it will be sent over to England in less time and at less cost than it could be made here. The total weight of engine and tender loaded is 80 tons 3 cwt. 14 lbs.

The Schenectady engines are essentially of the same type, but they are 7,000 lbs. heavier and have a six-wheeled tender practically of the English pattern.

CHAPTER XXVIII.

THE CARRIAGE AND WAGON WORKS

WHEN the Midland Company was formed and had been in working operation for a year, its rolling stock consisted of 282 carriages and 1,256 wagons, and their weights were as follows :—

First-class carriages, 4 tons 10 cwt., composite, 4 tons 5 cwt. ; second-class, 4 tons ; third class, 4 tons 12 cwt. ; trucks, 3 tons ; wagons, 3 tons 5 cwt.

That was the state of affairs in 1845. In 1900 there were 295 first-class carriages, 952 composite, 2,000 third-class, 109 post-office vans, 467 horse-boxes, 620 passenger vans, or a total of 4,989 vehicles for passenger traffic, while there were 118,182 wagons, etc., for goods traffic, or a total of 123,171 rolling-stock vehicles. The early carriages ran on four wheels, and were short in length and very low in the roof ; whereas now the latest carriages are 60 feet long, exclusive of the buffers, run on two bogies with six wheels each, and weigh 24 tons for ordinary vehicles and 32 tons each for dining cars.

There are also corridor carriages, which have been largely introduced on the Midland system ; but at present the question as to the rolling stock of the future remains in a very unsettled condition, and is a source of great thought and anxiety to all concerned, although it is pretty clear that corridor cars are in time destined to become almost universal. A road through a train from one end to the other is to many persons a great source of comfort combined with a feeling of additional safety, and where this is so passengers are attracted. On the other hand, there are still those who have a distinct preference for the compartment system, and who avoid the corridor trains as far as possible. There are those who long for the sociability of the corridor carriage, and there are others who prefer to rest, sleep, write, smoke, or be accompanied by their wives and families in a compartment by themselves.

With a view to meeting the convenience and the comfort of all

parties the Midland give equal facilities to both systems ; but certainly corridor carriages can only come into general use very gradually, as it would be a very serious thing for railway companies to bring about a sudden change, because many of the older class of carriages could not be converted into the new system, which moreover gives less passenger-carrying capacity and less seating room per carriage. It also increases the proportion of dead weight in a train to the paying load in a ratio which has already seriously taxed the locomotive power on all railways.

Whatever kind of carriage may be the vehicle of the future, there is no doubt that the best-paying carriage, as far as the shareholders are concerned, is what is known as the six-wheeled one of five compartments, which gives sitting accommodation for fifty third-class passengers, and the weight is only about 12 tons. This return of 4s. 2d. per mile (of the carriage filled) is the best on the Midland system in proportion to the total weight carried.

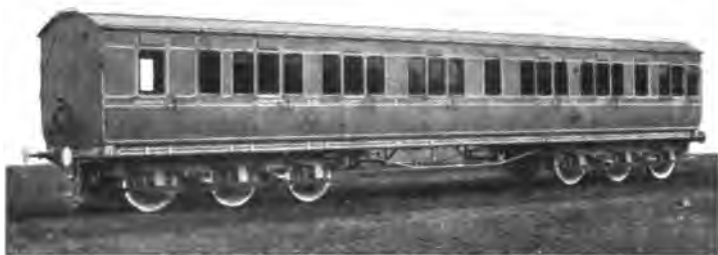
But perhaps the greatest advancement in the way of promoting the comfort of third-class passengers was when the Midland announced in 1875 that they would in future have all their third-class carriages provided with cushioned seats. It is difficult, if not impossible, at this time of day to picture the varied feelings which were aroused by a change of this apparently simple character. It was said to be an unfair attack on the second class of other companies ; an undue pampering of the working classes and of the third-class passenger generally ; to all of which Mr. E. S. Ellis, the then Chairman of the Company, replied that the third class were the best paying customers, and that they were entitled to this consideration. That this view was a sound one is evidenced by the fact that the change has been almost universally adopted, greatly to the public advantage.

At this period there was a considerable quantity of Midland rolling stock, which had been in use for a long time, in third-class carriages open from end to end, having straight backs to the seats ; and when this cushioning of all third-class carriages was resolved upon these old carriages were taken off the line and broken up.

A railway carriage has an enormously long life, if it does not get out of date, and that is all the greater reason why coaches which are being built should be of the latest design and character. The wheels and bogies upon which the Midland carriages rest can be renewed or replaced within a few hours from time to time as required, and it is upon these working parts that the main portion of the strain rests ; and the bodies of the carriages being kept well painted and upholstered from time to time will last for many decades.

The adoption of the bogie system not only gives greater ease in travelling, especially in rounding sharp curves and the crossing of junctions, but it equalises the strain and diminishes the jar communicated to the body of the vehicle, and through it to the passengers; and this reduction of shock extends the life and durability of the carriage itself.

The adoption likewise of what is known as the Mansell wheel, composed of wooden segments, compressed by hydraulic pressure and secured most strongly by bolts and rings, instead of iron spokes, also tends to promote silent and smooth running, and thus to preserve the carriage. There are likewise a number of other technical details, into which it is unnecessary to enter.



COMPOSITE BRAKE CARRIAGE, No. 916
(Paris Exhibition, 1889).

In regard to wagons, the English form of wagon remains very much what it was in 1832. The only difference substantially is in the size, which is increased, and the weight and carrying capacity from 3 tons to 8 or 10 tons, which is now the usual load. The other changes are of a trifling character, with the single exception of the substitution of spring buffers (in a great number of instances and in all modern Midland wagons for the solid wooden ones), which are of great advantage in lessening the jar during shunting operations or in stopping a train.

There has been no subject more debated, nor one in which the English system has been more called in question, than that of the size and construction of English goods wagons. It is true that the proportion of dead weight to the paying load is far greater in England than in America and in other countries which use the long bogie

wagons for heavy weights and great loads. A modern English wagon to carry 10 tons of goods or minerals weighs 5 tons 10 cwt. (dead weight); whereas one of the large American wagons, weighing 9 tons, would carry 30 or 35 tons of goods as one load. But the system of short wagons has grown up with the whole system of British railways, and forms an integral part of it; and an attempt to alter it would be so vast an undertaking that, except in very special instances, it would be almost out of the question even to consider it. However much advantage there might be derived, the alteration could not be made under existing circumstances; it would involve such gigantic alterations and so great sacrifices that it could not possibly pay.

To begin with, the colliery companies construct large numbers of their sidings at pits with turntables, which are only just large enough to turn the present four-wheeled wagon; their weighing machines are only long enough to weigh the same sized wagon; the coal drops at the great coal depôts in London and elsewhere can only deal with the present wagons; the turntables at docks and wharfs, the lifts in goods sheds, the turntables and lifts at breweries and brewery sidings, and, in fact, on the premises of every class of trader using wagons all over the country, are only adapted for existing wagons. So that all these various companies and individuals have large vested interests in the maintenance of the present size of wagon, and the general adoption of any other would be strenuously resented. Thus, although in itself an apparently simple question, it is impossible to say what the consequences or the cost would be involved in any alteration.

There are many small stations which only require a small quantity of traffic, and to send a wagon capable of carrying 30 tons and only conveying 3 or 4 tons of goods would be a most extravagant arrangement. Of course, it is true that for carrying long lengths of timber or immense quantities of coal from one given point to another where there are suitable arrangements at each end for dealing with it a great saving of locomotive power would be effected. Whatever may be the ultimate outcome of the discussion of this important question, British railway companies do not see their way to carry out this change at present, and in order to make any alteration pay a constant stream of heavy traffic must be assured.

The Midland are doing their utmost to secure all reasonable advantages to traders by largely increasing the supply of "covered" goods wagons, or what the Americans call "box cars," which are far more satisfactory for the conveyance of goods than the ordinary open wagon covered with a sheet. Not only do they hold a greater quantity of paying load, but there is no danger of damage to goods

through sheets being defective, neither is there any risk of fire owing to sparks from the engine.

The process of carriage construction is briefly as follows: Two longitudinals, known as "sole bars," form the sides of the main under-frame of the vehicle, upon which is afterwards to rest the inclosing superstructure, or body of the carriage. The ends of each of these "sole bars" are strongly attached to each other by the two headstocks, or ends of the under-frame, and the whole strongly stayed together. This, with the various stays and struts, makes an extremely strong and rigid frame, capable of resisting strains in all directions, and forms the foundation, so to speak, of the carriage, and is complete in itself. In the largest carriages the staying is most elaborate, and is accomplished by means of tension bars, or tie-rods, which, when properly adjusted, give great strength and rigidity to the structure.

The body of the carriage in which passengers travel is quite a separate part and is also complete in itself. The floor of the carriage is next put together, and corner and intermediate door and window pillars or uprights are fixed, and bars or ribs are adjusted to support the roof. The whole is then inclosed inside and out with panelling of the most suitable timber. The whole of the woodwork is of the strongest and best possible character and is all prepared by special machinery for each part. The doors are then fixed in position, the window-glass is fixed, and the body of the carriage is then placed on the under-frame, to which it is firmly secured and bolted. Then the whole structure is lifted by cranes, and the wheels or bogies, as the case may be, are secured in position.

The structure is now complete in its skeleton, and the seats having been fixed, the painters, decorators, and upholsterers commence their important work, for the embellishment of a Midland carriage is now of an elaborate and costly character.

The selection of woods and panellings for internal decorative purposes has become a work of art, and the Midland have always a very valuable stock of the most costly woods for the purpose at the Derby works. The carriages having thus been constructed and fitted internally, the continuous brake apparatus and the hot-water pipes are fitted for conveying hot water from the boiler of the engine to the carriages in winter; special appliances for dining cars or lavatory purposes are put in; spring buffers, couplings, etc., are fixed, and the painting and varnishing, and the crest of the Midland having been emblazoned on the doors of the first-class compartments, the carriage is sent out into active service.

In addition to building carriages for their own system exclusively,

the Midland also construct some of the joint stock used in conjunction with other railways, and particularly for Scottish traffic in conjunction with the North British and Glasgow and South Western Railways.

It is not too much to say that the latest productions from the Midland carriage works at Derby are really the highest examples of the coachbuilder's art, and are models of utility, beauty, and stability.

The carriage and wagon works occupy a site between the Midland line to Birmingham and the turnpike road to London, 86 acres in extent, of which 24 are covered by buildings which are supplied with the latest and most useful machinery for all purposes.

In addition to the office at the entrance, there are seven main buildings and three timber store sheds, all widely separated from each other for safety in case of fire. Over 3,500 workmen are employed, and the belts driving the whole of the machinery in all the buildings run under the floors, which are thus left clear for the operations of the workmen.

Of these seven main buildings the dimensions are as follows :—

	Feet.
Wagon shop . . .	320 × 200
Carriage shop . . .	400 × 200
Carriage painting . . .	400 × 300
Trimming, finishing, and sewing shops . . .	400 × 300
Sawmill . . .	320 × 200

Fitting, machine, wheel-lathes, and wood-wheel shops, 220 × 200 feet; smithy, with over 100 rows of hearths, spring shop, bolt and wheel shop, 220 × 200 feet; and general stores, iron and brass foundry, etc., 220 × 200 feet. The buildings are all of one storey, and they are admirably lighted and ventilated; and there are over 12 miles of sidings connecting them with each other and with the various lines of the Company.

CHAPTER XXIX.

THE ADMINISTRATION OF THE MIDLAND RAILWAY WITH SOME ACCOUNT OF ITS ADMINISTRATORS

THE general scheme of the administration of the Midland Railway Company is clearly illustrated in the chart on page 259.

The administration of a great line of railway like the Midland system is, as a matter of necessity, somewhat complicated ; but when clearly explained it will be found that the whole has been reduced by division and subdivision into what may be termed simple elements in branches and departments. Supreme central control is, of course, a *sine quâ non* in all matters involving general policy or principles, and while a great measure of local control is permitted on what are recognised lines of dealing either with the ordinary passenger or goods traffic and the arrangement of the staff, yet everything has to be reported to headquarters at Derby to be there properly recorded and confirmed. The system of management in general is a combination of the utmost possible freedom of action within clearly defined limits to those in authority at the various centres, consistent with all matters involving questions of policy or matters of vital importance raising questions of principle being submitted to the chief officials and the directors of the Company at headquarters.

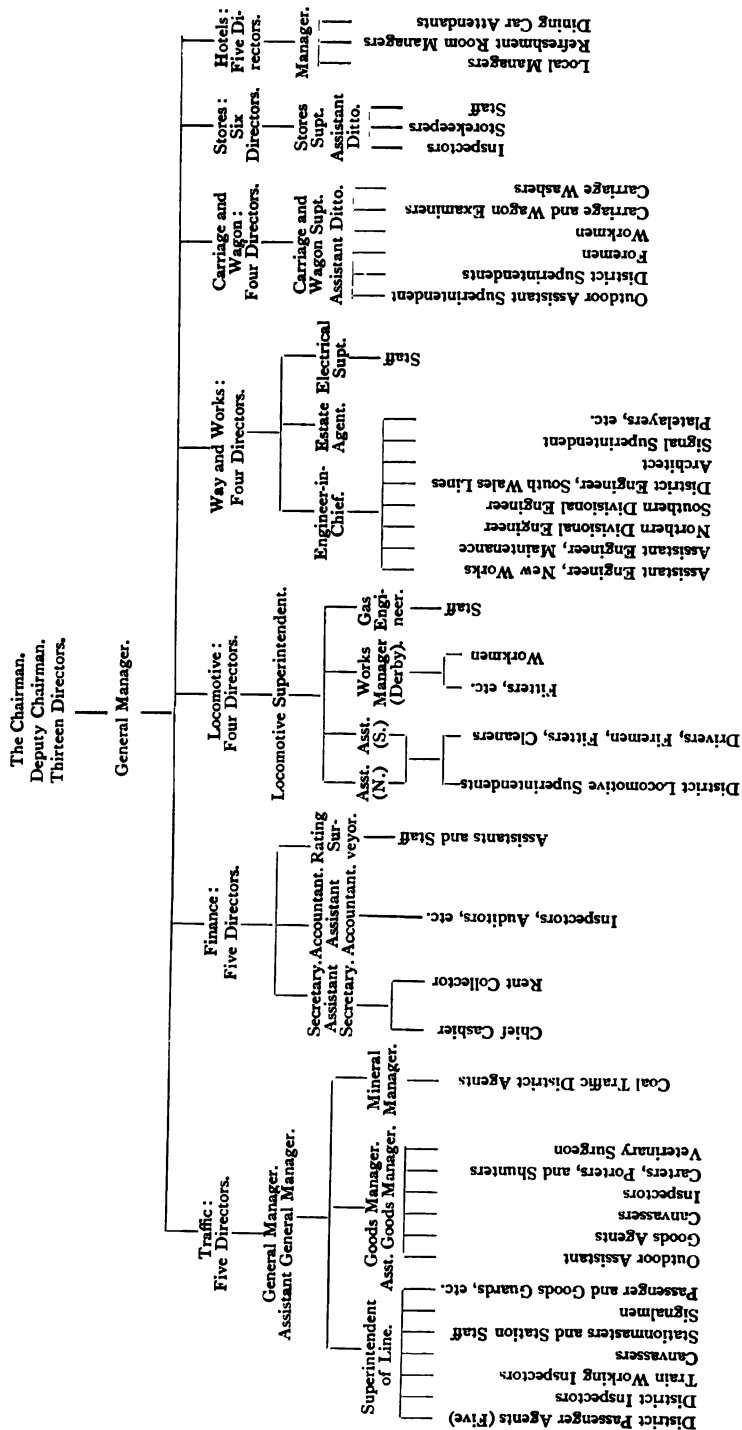
But while this may be true as a general statement of fact, it ought to be pointed out that while small matters can be safely left with local representatives and local authority, the utmost vigilance and supervision is constantly being exercised by the chief officials to keep in the very closest touch with all matters concerning the branches of the service or the departments with which they are connected.

Every matter, whether ordinary or extraordinary, has, as a matter of fact, to be reported to headquarters either by an ordinary return or by a special report, and dealt with by the heads of departments according to the requirements of the case.

MAP OF MIDLAND RAILWAY AND ITS CONNECTIONS.



CHART OF ADMINISTRATION, 1901.



Primarily the whole control of the system is vested by the proprietors or shareholders in a body of fifteen directors, of whom four retire annually.

The following is a complete list of those gentlemen who have held the office of director on the Midland system from 1844 to 1901 :—

George Hudson.	William Longsdon.
John Ellis.	W. P. Price.
Samuel Beale.	J. F. Bell.
Joseph Holdsworth.	William Hannay.
W. E. Hutchinson.	E. S. Ellis.
Josiah Lewis.	Sir James Allport.
Sir Oswald Mosley, Bart.	Timothy Kenrick.
William Murgatroyd.	C. H. Jones.
W. L. Newton.	Richard Birkin.
Abel Peyton.	George Hounsfield.
John Taylor.	Sir M. W. Thompson, Bart.
Charles Tee.	G. B. Lloyd.
John Waddingham.	J. W. Cropper.
Samuel Waters.*	Sir Joseph Whitworth.
Henry Youle.	Grosvenor Hodgkinson
George Byng Paget.	Hugh Mason.
Sir Isaac Morley.	Michael Biddulph.
Sir Joseph Paxton.	Robert Rankin.
E. H. Barwell.	Lord Burton.
William Beverley.	W. L. Beale.
Francis Carbutt.	Sir W. Coddington, Bart., M.P.
John Mercer.	John Noble.
William Smith (Sheffield).	

PRESENT DIRECTORS.

Sir Ernest Paget, Bart.	G. Behrens.
Charles Thomas.	J. W. Oxley.
W. U. Heygate.	The Rt. Hon. Lord Belper.
Sir F. T. Mappin, Bart., M.P.	The Rt. Hon. Lord Farrer.
H. T. Hodgson.	J. C. Carter.
L. R. Starkey.	W. H. Hodges.
R. A. Allison, M.P.	C. Booth, junr.
Sir Henry Wiggin, Bart.	

The directors themselves appoint from their own number their own chairman and vice-chairman, and they have also the power of appointing the whole of the officials and staff necessary for the working of the line. Indeed, it is expressly stated that there is always a right of appeal on the part of any servant of the Company to the directors by way of memorial through the head of the department concerned. By this means the directors retain very large general powers in their own hands, but as a matter of fact the general working and management of

* The name of Samuel Waters is given in the Midland Railways Consolidation Act, 1844, as one of the first directors of the Company, but there is no record of his ever having attended a Board meeting.

all departments is vested in a sub-committee of directors acting in conjunction with the responsible head of the department.

The directors meet weekly for the transaction of the ordinary business of the Company; but in addition to this the Board of Directors is split up into seven important and several subsidiary sub-committees, the principal sub-committees being Traffic, Finance, Locomotive, Way and Works, Carriage and Wagon, Stores, Hotels and Refreshment-rooms. Further, there is a General Purposes Committee, which consists of the whole Board of Directors. This General Purposes Committee's functions are very important, as they decide as to the carrying out of new works, the provision of increased rolling stock or machinery involving capital outlay exceeding £100, and also the acquisition and disposal of lands and property. The nature of the business dealt with by the other sub-committees is sufficiently indicated by their titles. The minutes of each of these sub-committees are submitted to and confirmed by the Board, and are not generally considered to be operative until they have been approved by the Board of Directors.

The Chairman and Deputy Chairman of the Company are *ex officio* members of all Midland committees, and they are also representatives to the Railway Companies Association; and all directors who have seats in either House of Parliament are members of the Parliamentary Committee of the Railway Companies Association. A representative director is also elected as a delegate to attend the committees of the Railway Clearing House and also the Irish Railway Clearing House.

The duties of the directors are also further largely increased by representing the interests of the Midland Railway Company on the joint committees responsible for the management and working of the various railways of which the Midland Company is joint owner, or in which it has more or less large sums of money invested.

In this way directors of the Midland Company are appointed to serve in conjunction with the representatives of other lines on the following joint committees:—

Ashby and Nuneaton, and Enderby branch	} Jointly owned with London and North Western.
Bristol joint station and line, Clifton and Bristol, Bristol Port Railway and pier, Severn and Wye and Severn Bridge, Berkeley branch, Great Malvern extension.	} Jointly owned with Great Western.
Carlisle, goods line.	{ Jointly owned with the London and North Western, Caledonian, and Glasgow and South Western.

Carlisle, Dentonholme goods station.	{	Jointly owned with the Glasgow and South Western and North British.
Cheshire Lines.	{	Jointly owned with the Great Central and Great Northern.
Forth Bridge.	{	Jointly with the Great Northern, North Eastern, and North British.
Furness and Midland.		Jointly owned with Furness.
Midland and Great Northern.		Jointly with Great Northern.
Norfolk and Suffolk.	{	Jointly with Great Northern and Great Eastern.
Normanton Station.	{	Jointly with the North Eastern and Lancashire and Yorkshire.
North and South Western Junction.	{	Jointly leased to the Midland, North Western, and North London.
Tottenham and Forest Gate.	{	Jointly controlled by Midland and London, Tilbury, and Southend.
Tottenham and Hampstead Junction.	{	Jointly worked, and shares largely owned, by Midland and Great Eastern.
Otley and Ilkley, Swinton and Knottingley.	{	Jointly owned with the North Eastern.
Port Patrick and Wigtownshire Railway; also Larne and Stranraer steamboats.	{	Jointly with the London and North Western, Caledonian, and Glasgow and South Western.
Sheffield and Midland.		Jointly owned with Great Central.
Somerset and Dorset.	{	Jointly owned with the London and South Western.

From this very formidable list of engagements it will be seen that the life of a Midland director must be a very active and busy one, involving much railway travelling over long distances, as well as great mental strain in dealing with matters of great complexity and importance, which are constantly arising alike in regard to the Midland system itself and its ever-growing traffic and the many lines in which Midland money has been invested. Of course, the main responsibility, as far as the Directorate is concerned, rests with the Chairman, and his life is very largely absorbed, like that of the heads of the departments and officials, in exercising that eternal vigilance by which alone the vast interests of the Company can be safeguarded, and its efficiency, enterprise, and dividend-earning capacity maintained. When it is considered that about £4,000,000 per annum are distributed in dividends to shareholders and debenture holders, and that of all the gross receipts from all sources, amounting to about £11,000,000, no less than 61.02 per cent. is absorbed by the actual cost of working, the anxieties and responsibilities of directors and officers of the Company are not to be lightly regarded by any means. To illustrate the position and

bring the figures into the simplest form the relationship works out in this way. Of every sovereign earned by the Midland Company the shareholders receive the sum of 8s. in dividend as interest on the capital outlay, there being an expenditure of 12s. for actual working cost. This proportion of working expenses and dividend has always engaged the greatest attention of the Directorate, as it constitutes the vital point in management and is the ultimate test of the earning capacity of the system. But in spite of the serious attention which has been given to this subject by all railway companies, there has been a constant tendency for a good many years for the proportion of working expenses to increase on all systems, and the Midland has been no exception to the general rule. The march of social progress, increased wages, and shorter hours to servants, the increased cost of coal, the increased cost of rolling stock, increased efficiency in working the line, increased comfort and safety of passengers, increased cost of the appliances, and the requirements connected with the collection and distribution of traffic generally, together with the increased competition and consequent less earning capacity per train mile—these are the main causes in distributing the balance of proportion in gross earnings and working expenditure. Only a few years ago 50 per cent. was regarded as a fair standard, when half the earnings were absorbed; but the Midland, of all companies, could not afford to be behind in any scheme of progress either in regard to the comfort of its passengers, the efficiency of its passenger and goods service, or in the material comfort and well-being of its servants, upon whom so much depends. Whether this growth of the working expenditure be continued or not, the problem may safely be left to be successfully met and solved by the determination and capacity of those having the control of the system.

Those who have had the honour of presiding over the destinies of the Midland Company, together with the dates of their appointment, will be found in the following table :—

LIST OF CHAIRMEN.

Name.	Appointed.	Retired.
George Hudson*	May 10th, 1844	April 17th, 1849. Died 1871.
John Ellis	May 7th, 1849	March 3rd, 1858. Died Oct. 26th, 1862.
George Byng Pagett†	Dec. 2nd, 1857	Died Jan. 25th, 1858.

* Mr. Hudson having been previously nominated, became Chairman on May 10th, 1844, when the Company's Act received the Royal Assent.

† Mr. G. B. Paget, although elected December 2nd, 1857, was seized with sudden illness, and died on January 25th, 1858, before he had attended a shareholders' meeting, and Mr. John Ellis continued to perform the duties till March 3rd, 1858.

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Name.	Appointed.	Retired.
Samuel Beale, M.P. . . .	March 3rd, 1858.	Oct. 5th, 1874. Continued a director.
William E. Hutchinson . .	Oct. 5th, 1864 .	Feb. 16th, 1870. Died Dec. 6th, 1882.
William Philip Price, M.P.	Feb. 16th, 1870 .	May 20th, 1873.
Edward Shipley Ellis . . .	May 20th, 1873 .	Died Dec. 3rd, 1879.
Sir Matthew Wm. Thompson	Dec. 16th, 1879 .	Dec. 20th, 1890.
Sir Ernest Paget	Jan. 2nd, 1891 .	—

The periods covered by the respective chairmen varied very much not only in duration, but also in their permanent influence on the position of the Company. Some of the directors had to hold the helm of affairs during times of calm and steady progress, whilst others had to steer a straight course during times of great stress and trial. But none had to face more stormy or perilous times than Mr. George Hudson—the Railway King, or, as he was sometimes called, “The Prophet of the Iron Road”—the founder of the present Midland Company, during the great railway mania which reached its culminating point about the years 1845–6.

MR. GEORGE HUDSON was undoubtedly a most remarkable man, whose name both for good and evil, it may be said, must for ever be associated with the rise and progress of British railway enterprise. His rise from the position of linen draper to Lord Mayor of York, and thence to the unique position of Railway King was phenomenal, and forms one of the most striking commercial romances of the century. His connection with the Midland Company has been touched upon in dealing with the progress and development of the Company's system; but it would be unpardonable and lamentable weakness to ignore or attempt to ignore the great and beneficent part which George Hudson undoubtedly played in combining, co-operating, amalgamating, and extending the railway system of the kingdom, which has proved so beneficial to the nation. But if his policy was sound and his great work was of national value, if not of world-wide importance, as combining and calling into being in a vast cohesive whole isolated companies and short sections of line, and thus demonstrating in a practical way what could then be accomplished, and thereby paving the way for the greater events and the larger schemes of the succeeding generations, it had also its terribly seamy side. During the railway mania, when George Hudson was king by popular acclaim, when all the world stood amazed at fortunes being made, as it were, without effort and as if by magic, when obscure individuals became millionaires, it was little to be wondered at that the erstwhile linen draper of York should “lose his head,” become dictatorial and somewhat violent, and certainly very

irritable in his temper. He was interested in practically every railway company (and there were many then) from London to Edinburgh. He had called George Stephenson and his great engineering knowledge to his aid; he had determined the routes of lines of railway; he had negotiated with the owners of the land; and had guided and fostered his plans by means of shares, premiums, dividends, and many devices whereby they might become remunerative. He was a great financial genius undoubtedly, of whom much might be written; but, unfortunately for his reputation, the once faithful linen draper and Lord Mayor of York was, after various dark rumours, found guilty by various committees of investigation of offences involving great frauds. Powerful, he became dictatorial, and his efforts were directed to keeping his co-directors in the dark. He was so much involved in various companies and was so deeply concerned in manipulating them that it was bound in the end to lead to jealousy and distrust. Hudson had a wonderful capacity for calculations, and he had organising abilities of a high order; but his rapid rise to prominence excited envy, and very broad rumours that his conduct was not above suspicion spread and multiplied, and their confirmation was demanded by inquiry. He had become a member of Parliament for Sunderland, and by seductive and attractive utterances he paraded himself as seeking only to promote the welfare of the country, and consequently the seriousness and persistence of the allegations against him came as a rude shock to the railway world. It was stated that his parliamentary career was used for selfish purposes; and in regard to some of the companies with which he was associated, over-payments were alleged, irregular entries were numerous, and there were errors in other matters. Holders of railway stock became alarmed, the value of railway property fell rapidly, and large sums of money were expended with too lavish a hand in the execution of works. Committees of investigation were demanded on every hand, and suspicion was thoroughly aroused, and some very astounding and lamentable discoveries were announced. Thus in connection with one railway he was found to be indebted to the extent of £11,000 in his payments on the purchase account; in another company he had used the company's funds to pay for his shares, which he had taken in an assumed name. By delaying the completion of the register of shareholders a fraudulent increase in the number of shares issued was concealed from the shareholders. He also appropriated shares upon which neither deposit nor calls had been met, and upon which dividends were regularly paid. He appropriated to his own purposes moneys which companies had voted for the payment of land for the use of the company; he bought

iron at a low price, and sold it to some of his companies at a great profit; in fact, his frauds were scandalous, gigantic, and widespread. Subsequently it is stated that Hudson tried to atone for some of his misdeeds by voluntarily repaying some portion of the money which he had misappropriated. He escaped a criminal prosecution, but whereas only a year or two previously his acceptance of the chairmanship of a small railway company overjoyed the shareholders, the Railway King passed out of the public view amid the execrations of all honest men.

Such is the story of the first Chairman of the Midland Railway, and such is his life as a whole; but in regard to the Midland Railway Company in particular, although there were suggestions that he was not at all times quite loyal to their interests, it must be stated that the committee of investigation on the Midland found that the accounts had been faithfully kept, and that a strong and powerful directorate had preserved the honour and reputation of the Company unsullied. That this was so, a large measure of praise is due to Mr. John Ellis, the hard-headed Quaker, who subsequently undertook the controlling influence.

Mr. Hudson's fall was rapid and complete, for on April 17th, 1849, he resigned the chairmanship of the Midland Company, and in less than a month every vestige of control in every line in the kingdom had passed out of his hands. He was no longer Railway King—his name had become a byword and a reproach. Hudson died in 1871.

In dealing with Mr. Hudson's career it has been urged that he was drawn into a vortex by the gigantic speculations while the railway mania lasted, and that he was a great railway genius, the value of whose work has been very imperfectly appreciated. What that mania was, and its far-reaching effects, is difficult to thoroughly appreciate after the lapse of over half a century. The year 1845, for example, was unparalleled in the history of railway enterprise. In the language of a railway authority of the day, it may be stated that "the prominence that has been given to railway affairs by the newspaper press and by discussions in Parliament—the extension of the railway system throughout Great Britain, the continent of Europe, and North America—have convinced even the most prejudiced that railway communication is the most rapid, safe, and economical that human ingenuity has yet devised. This species of enterprise no longer appears to the public as chimerical or too much in advance of the age to be worthy of serious trial; but merchants, manufacturers, wholesale dealers, traders, and farmers are all becoming supporters of railway locomotion and shareholders in existing or projected lines." In the construction of

English railways it was argued "every shilling expended is a national advantage. Not only does no capital leave the country, but no money is locked up or sunk, as many foolish speakers and writers have asserted. At the worst it is only a transfer of capital that can be complained of; but that is not a national evil, for, like Lord Bacon said truly, money was like muck, and did no good till it was spread. Seeing the large amount of capital required to construct the projected railways, many persons have said, 'Where is all the money to come from?' But these and double the number could be made with the greatest ease without the least addition to the circulating medium of the country. When a Railway Act is obtained, the money is not all wanted immediately, and therefore a surplus capital of a few millions would suffice to intersect Great Britain with railways and to supersede every common road. A manufacturer, for instance, holds fifty shares in a new railway, and pays a call of £2 per share at intervals of three months. When the call is paid up by all the shareholders the directors disburse the amount for labour and construction, which is again expended by the labourers for food and raiment with the shopkeeper, who is thereby enabled to hand back the amount in payment to the manufacturer, probably in time for the next call; and thus it goes on till the entire line is completed, during which operation not one shilling capital is abstracted or lost to the country. That some idea may be formed of the immense stimulus the trade of the country would derive from the formation of these public works, it is only necessary to state that were 2,000 miles of the projected railways to be constructed it would give employment to 500,000 labourers and 40,000 horses for the next four years. The necessary buildings, sheds, and permanent way would cover 20,000 acres of land; and to lay a double line of rails would require 400,000 tons of iron." The *Times*, on Monday, November 17th, 1845, printed a supplement containing a tabular statement of the "Railway Interest of the United Kingdom," and which occupied five pages of the paper. These made a total of "1,263 railway companies, requiring for construction a capital of £563,000,000." The *Times*, commenting on this state of affairs, declared that this was a fact without a parallel in the history of the world. "A widespread mania of rich and poor, of idle and busy, an unprecedented mass of speculation, not the folly or wickedness of a few, but the act of the entire nation." The huge expenditure of the period was described as "capital sunk in earth-works." In 1844 Railway Acts were passed for the construction of 2,841 miles of railway, and a very cautious estimate of the capital expended and projected in 1845 is given in the following:—

SUMMARY OF RAILWAY CAPITAL.

	£
Capital expended in lines open	70,327,264
Capital required for railways in course of construction	61,930,020
Capital required for English projected railways	427,720,000
Capital required for Irish projected railways	42,910,000
Capital required for projected foreign railways	98,223,333
Capital required for projected Colonial railways	29,775,000
Total	<u>£730,885,617</u>

This table does not include new branches, deviations, and connecting links then proposed, and which, if carried into effect, would have added at least a further sum of £30,000,000 to the total.

The alarm created by the opponents of these schemes was such that of the Bills projected only 561 were presented out of 1,263, and the number was further reduced to 271, the number which actually received the Royal Assent. Of these, 24 were for amalgamations and purchase, 7 for new stations and enlargement, 131 for branches to be constructed by old companies, and 109 for new lines by new companies, the whole requiring a capital of over £100,000,000. The total length of these lines was upwards of 4,700 miles (60 of which was tunnelling), and over 55,000 acres of land were required for their sites.

These were the surroundings in which Hudson was the moving spirit, and the greatness of Hudson's railway genius only makes it all the more lamentable that so great a man should have so deplorably fallen and have been guilty of acts which resulted in ruin and universal condemnation.

MR. JOHN ELLIS, M.P., of Belgrave, Leicester, in 1849 assumed the chairmanship of the Midland, after having rendered very distinguished services as Deputy Chairman from its inception, being the founder of the Leicester and Swannington line. Mr. Ellis was essentially the man for the hour, for he was an extremely strong and capable administrator, and exactly suited for critical times when every railway company in the kingdom required to repair the loss and restore the confidence so seriously impaired by the railway mania and the cruel blows caused to finance by the delinquencies of Hudson and others. Not only did Mr. Ellis do this, but by a bold and sound policy he succeeded in greatly expanding the ramifications of the Midland system by securing, almost entirely by his own personal efforts, the Bristol and Birmingham line. But for his promptitude this link would have passed into the hands of the Great Western, which would not only have been a great loss to the Midland, but would have brought up the broad-gauge system to



JOHN ELLIS

(Portrait in Shareholders' Room, showing the Glenfield Tunnel
and the Engine named "Buffalo").

TO MY ABSORB

Birmingham, and thereby have greatly hampered the interchange of traffic, while the great through route which the Midland now hold from Bristol and the west of England to Leeds, Manchester, and the north would have been entirely lost to the Midland, and a considerable portion of it at least would have reverted into the hands of rival companies. Mr. Ellis, who at the time was Deputy Chairman of the Midland Company and a director of the London and Birmingham, also a director of the Leicester and Swannington lines, as well as the head of the large coal firm of John Ellis and Sons, which he founded, gave important evidence before the Royal Commission in November, 1845, as to the great difficulties attending the transfer of traffic from the broad to the narrow gauge and *vice versa*, and expressed the opinion that the traffic of the country could have been much more conveniently managed if the Great Western had not adopted the broad-gauge; and further, expressed "his perfect horror" of any interlacing of the broad and narrow-gauge systems. His prompt action and the strong feeling which Mr. Ellis entertained on this subject undoubtedly enabled the Midland ultimately to secure the Bristol and Birmingham Railway as part of their system. The soundness of Mr. Ellis's opinion in favour of the narrow gauge is proved by the fact that the Great Western have taken up the broad gauge and have relaid the line on the narrow system. The period of Mr. Ellis's chairmanship extended from May 7th, 1849, to March 3rd, 1858, with the exception of a few weeks, when Mr. G. B. Paget nominally held office, but was seized with illness and died. Mr. Ellis held office long enough to see a great expansion of the Midland system, when by the opening of the Leicester and Hitchin line the Midland planted its foot in the great Metropolis, with its trains running over the Great Northern system and landing its passengers at King's Cross. Mr. Ellis had a fine personality, and his rule on the Midland was marked by great prosperity. The very soul of integrity, he had a bold and clear conception of the capabilities of the Midland and its importance to the commerce of the nation, and he did much to raise the administration of the Midland to that high level which has so long distinguished it. He was member of Parliament for Leicester Borough for a few years, being elected in 1848.

MR. SAMUEL BEALE, M.P., of Birmingham, took a very active part in the formation of the Birmingham and Derby Junction Railway, and became Chairman of that Company. He subsequently joined the Midland Board of Directors at the time of the amalgamation, and ultimately succeeded to the chair of the Midland on March 3rd, 1858. He was connected with the well-known firm of solicitors at Birmingham, and during his presidency the Midland Company made steady, solid

progress. When he retired, in October, 1864, on account of failing health, he continued on the Directorate, and £1,000 was placed at the disposal of the Board, which was utilised for presenting Mr. Beale with a service of plate, while in turn Mr. Beale gave a fine portrait of himself, which forms one of the collection in the Board-room at Derby. During Mr. Beale's chairmanship in 1864 the dividends reached the high-water mark of £7 7s. 6d. per cent. for the year.

MR. WILLIAM EVANS HUTCHINSON, of Leicester, was another member of the Society of Friends who presided over the fortunes of the Midland. Succeeding to the chairmanship in October, 1864, he brought with him a practical experience which is rare even among chairmen of great railway companies. He was a Leicester citizen, and began his career as a chemist and druggist in the main thoroughfare; but he, in 1839, forsook his chemist's shop in Gallowtree Gate and the manufacture of pills and the preparation of medicines and entered on a widely different sphere, namely that of Superintendent and Manager of the Midland Counties Railway, a position which he had occupied during the formation of the line according to the Act passed in 1836. He undertook the great task—and it showed great business capacity in those early days—of making all the arrangements for the opening and working of the Midland Counties Railway in 1839. It was especially gratifying to find that although Mr. Hutchinson was without practical experience, the arrangements of the quiet, meditative little gentleman were most successful; and in 1840, when he resigned this office, he was voted £500 in acknowledgment of the special services he had rendered in the very difficult circumstances connected with the opening of a new line, and he was elected on the Board of Directors. He was also a director of the Leicester and Swannington, and he became one of the members of the Board when the Midland was first constituted. He was a man of few words, of great discernment, and he gave the best years of his life to the service of the Midland Railway. He resigned his chairmanship in February, 1870, but he continued on the Board till his death on December 6th, 1882. He had thus served on the Midland Directorate from its formation in May, 1844, to December, 1882, a long period of 38½ years. He was the last of the original Board. During Mr. Hutchinson's connection with the Midland he had witnessed many fluctuations in the fortunes of the Company. He had seen the shares of the Company quoted at more than £190, and he had seen them quoted as low as £32 or £33. He had seen the dividends at £7 7s. 6d. per cent., and he had seen them as low as £2 1s. 0d. per cent.

MR. WILLIAM PHILIP PRICE, M.P., Gloucester, who was appointed on

February 16th, 1870, resigned his presidency on May 20th, 1873. During his chairmanship several very important administrative reforms were introduced, and notably the carrying of third-class passengers by all trains. His abilities and his great knowledge of railway working, linked to a calm judicial mind, marked him out as one of the most capable railway leaders in the kingdom, and accordingly the Government of the day offered him the position of one of the three commissions under the Railway and Canal Traffic Act on its coming into operation in 1873, on the acceptance of which he retired from the Midland Board. He was at one time member of Parliament for Gloucester.

MR. EDWARD SHIPLEY ELLIS, of Leicester, son of a former chairman of the Midland, took office on May 20th, 1873, and occupied the position till his death on December 3rd, 1879. He was one of those who were at the birth of railway enterprise, and during his youth he came under the spell of George Stephenson, with the result that during the whole of his railway life Stephenson's name and memory were a source of profound veneration and inspiration to Mr. Ellis. An intimate friend of his once remarked to the writer that he



MR. EDWARD SHIPLEY ELLIS.

never had the idea of Mr. Ellis being a great man, because he was a man of one great idea, and that was all treasured up in the Midland Railway. That was a very narrow and restricted view of the life of Edward Shipley Ellis; but it was also a great testimony to the way in which he, conscious of the responsibilities of his position during very difficult and trying times, threw himself heart and soul into the discharge of his duties. On more than one occasion he stated to the writer that the Midland system had become so important, and its continued success so essential to the well-being of its shareholders as well as to the commerce of the country, that its affairs, its policy, administration, and management must absorb the whole commercial life of the men at its head, including that of its Chairman. Punctuality in the running

of trains, and civility and attention on the part of the servants of the Company were two of the things he tried to enforce and secure. He was a man of great determination, very cautious in the formation of his judgments, but when once his mind had become fixed on what he conceived to be adequate foundations his confidence and power could not be shaken. Mr. James Allport found in Mr. Ellis a true and staunch friend and supporter in the masterly policy which he from time to time initiated, and much of Allport's success was due to the great intellectual, moral, and material power of Mr. Ellis. No one who was present at the meeting of the Midland shareholders in November, 1874, will ever forget the fierce way in which the proposal to abolish second-class was assailed; nor the able way in which Mr. Ellis quietly marshalled the facts and announced the determination of the directors to stand by their policy, notwithstanding the great pressure which had been brought to bear by other companies. It was the most notable and memorable railway meeting during the last quarter of a century. A weaker man would have yielded before the storm. Mr. Ellis, by his firmness and strength of purpose, as well as the grasp which he had of all the facts and his confidence in the soundness of his judgment, carried the day; and twenty-six years' experience has verified the soundness of his position. Another period when Mr. Ellis showed great financial ability was during the construction of the Settle and Carlisle line, when unlooked-for difficulties had to be met in a unique way, as set forth in that part of this volume referring to that extension. Mr. Ellis used to say that he owed much to railway companies—even to the extent of his wife, for he was first introduced to Mrs. Ellis at the opening of the Leicester and Swannington line. In fact, the whole of his life was more or less bound up in the Midland, and he, like Mr. George B. Paget, died in office on December 3rd, 1879. It is a curious circumstance that three notable chairmen of the Midland line lie in a corner of the Leicester Corporation Cemetery, namely, John Ellis, W. E. Hutchinson, and E. S. Ellis, within a few feet of one another, and a few yards away lie the remains of Thomas Cook and John M. Cook, of railway tourist fame.

SIR MATTHEW WILLIAM THOMPSON, Bart., of Guiseley, Leeds, who was Chairman from December 16th, 1879, to December 20th, 1890, was once asked in cross-examination before a committee of the House of Commons by a learned counsel who rather appeared to question Sir Matthew's trading experience, "What are you?" Sharply came the reply: "When I am at Derby, I am Chairman of the Midland Railway Company; when I am at Glasgow, I am Chairman of the Glasgow and South Western Railway Company; when I am at Brad-



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ford, I am a brewer ; and when I am in London, I am a barrister, like you, sir." During the eleven years of his chairmanship the most important event was the construction and completion of the Forth Bridge for railway traffic on March 4th, 1890. The Midland Railway Company being part owners of the Forth Bridge, Sir Matthew was *ex-officio* Chairman of that great undertaking, and in recognition of his services in that vast engineering work he received the honour of a baronetcy. His elevation to the Directorate of the Midland Company took place in 1865, so that he occupied a seat on the Midland Board for just a quarter of a century. He also served as Deputy Chairman under Mr. E. S. Ellis, and he represented for a good many years the Midland Company on the Cheshire Lines Committee. He was a man of very genial and kindly disposition.

SIR ERNEST PAGET, Bart., of Sutton Bonnington, Loughborough, was appointed Chairman January 2nd, 1891. He is the only son of the late George Byng Paget, a former Chairman, who, although cut down by death soon after his elevation, had been long associated with the fortunes of the Midland. He was born in 1841, and was a youth of seventeen at the time of his father's death. Previous to his appointment as Chairman of the Midland, on the retirement of Sir M. W. Thompson through ill-health, Sir Ernest had a rather varied experience, having served with the 7th Hussars and the Royal Horse Guards, from which he retired in 1867. Subsequently he was appointed Lieutenant-Colonel of the Leicestershire Yeomanry Cavalry, but when he entered upon his railway career he gave up military duties entirely. As Chairman of the Traffic Committee, and afterwards as Deputy Chairman of the Company, he rendered very valuable service to the Midland, and thus prepared the way for the highest place in the Company. Among the positions which he occupied were those of Deputy Chairman of the Nottinghamshire Quarter Sessions, a Deputy Lieutenant of the same county, and a Justice of the Peace for Leicestershire. He was also associated as Director with the Inter-Oceanic Railway of Mexico, Limited, Chairman of the Mexican Southern Railway Company, Limited, Chairman of the South Western of Venezuela Railway Company, Limited, *ex-officio* Chairman of the Forth Bridge Railway Company, the Somerset and Dorset Railway Company, the Tottenham and Forest Gate Railway Company, and the Tottenham and Hampstead Junction Railway Company. Sir Ernest, during the period of his chairmanship, has become more and more entirely absorbed in the Midland Railway. The "forward" policy of the Midland has been kept well to the front, and the advancement and consolidation of the undertaking have been very marked. There

has been a great doubling of the lines, so as to give four pairs of rails where the traffic was most congested. In fact, either by alternative routes or by four sets of lines, the Midland now have four roads practically from London to Stockport, also from London to Shipley; whilst by means of their right of running over the Lancashire and Yorkshire system the Midland have, in fact, four roads from London to Hellifield. The present Chairman has had to face some serious difficulties, and among them may be included the important "flanking" movement of the Great Central Line right through to London; and there has never been such keen competition for all classes of traffic as at the present day. Although the present Chairman has not had great departures of policy to inaugurate and to carry out, yet his responsibilities are greater than those of any of his predecessors. There is a greater mileage to supervise; there is a vast amount more capital for which he is primarily responsible; the duties on joint committees in conjunction with representatives of other companies have never been greater; a large number of stations which had become obsolete or utterly inadequate for present-day requirements have had to be rebuilt on a much larger scale at an enormous outlay. In fact, comparatively few stations now remain that existed at the time of the amalgamation in 1844. Sir Ernest received the honour of a baronetcy in the New Year's honours of 1897, in recognition of the splendid part which the Midland Railway Company has taken in railway development during Her Majesty's reign. Sir Ernest's great energy and capacity for administrative work, backed up by the great experience which he acquired whilst Chairman of the Traffic Committee, enable him to deal with all those multifarious duties and intricate questions of finance and general administration with a master hand. He is very clear-sighted, rather cautious, blended with firm determination—qualities the exercise of which are constantly called into play, in spite of all the advantages secured by an elaborate system of delegation.

CHAPTER XXX.

THE GENERAL MANAGEMENT

WHILST the directors are in supreme authority and have the ultimate responsibility of the affairs of the Company, the practical and technical head of the administration is, of course, the General Manager, who has the sole responsibility of giving final and authoritative advice in regard to all practical matters, and, further, he has the additional duty imposed upon him of seeing that it is carried into actual working. But although the whole of the general working and administration of the line vests in the General Manager, the executive responsibility for the working of the railway is divided into many departments, some of which have supreme heads, who are independent of each other and are separately responsible to the directors. The following heads of departments are directly responsible to the directors for the conduct and administration of all that comes within their respective spheres:—The General Manager, the Secretary, the Accountant, Locomotive Superintendent, the Engineer-in-Chief, the Stores Superintendent, the Carriage and Wagon Superintendent, the Hotels and Refreshment Rooms Manager. However, this general rule is subject to this modification, if it may so be termed, that the General Manager has the supreme control of the working of the line generally in all departments, and the directors confer with him on the general policy of the Company; and he likewise has to deal with all parliamentary matters, agreements and arrangements with other companies as to through traffic, leasing of lines, traffic arrangements on joint lines, and generally with all questions of the first importance, subject, of course, to strictly technical questions being dealt with by the chief officers of each department. The heads of these departments, subject to the approval of the various sub-committees of directors under which they act, are responsible for the appointment of the staff in their respective departments, their promotion or dismissal, and the fixing of their rate of pay; but all permanent additions to the staff have to be approved by

the Board of Directors. In fact, the whole system is one of carefully devised devolution combined with constant and watchful supervision.

The GENERAL MANAGER, in addition to his duties as adviser to the directors and the duty of exercising a general supervision of the whole of the affairs of the Company, also occupies what may be termed a dual position by undertaking the special control and superintendence of the whole Traffic Department, which is the largest and most important of all, and is at once the greatest spending department as well as the great channel through which the revenue flows from the public into the treasury of the Company.

It follows as a matter of necessity that a position of this varied and complicated character can only be adequately filled by a gentleman who has had a long and very wide experience, not only in the vast and intricate details of railway working, but also of large general knowledge of affairs and commercial and financial experience, combined with a sound judgment and what we British people understand by good common sense, great tact, and wise discrimination.

The Midland Railway Company have been particularly fortunate in their general managers, upon whom so much of the success of the railway depends. The names of those who have held this important office and the dates of their appointments are as follows :—

Name.	Designation.	Date Appointed.
P. Clarke . . .	Superintendent from North Midland Company . .	July, 1844.
J. Sanders . . .	Appointed General Superintendent of the management of all trains in the Coaching Department .	July, 1849.
J. Sanders . . .	General Manager . . .	January, 1850.
J. J. Allport . . .	„ . . .	Oct. 1st, 1853.
W. L. Newcombe . .	„ . . .	Oct. 1st, 1857.
J. J. Allport . . .	„ . . .	April 4th, 1860.
J. Noble . . .	„ . . .	Feb. 17th, 1880.
G. H. Turner . . .	„ . . .	May 20th, 1892.

It will be observed in the above list of notable men that Mr. J. J. ALLPORT held office altogether for the long period of twenty-four years, and he afterwards became a director, which position he occupied until his death. His name and the fame of his policy and administration, which have been dealt with in other parts of this volume, are indelibly associated with British railway enterprise. His name is a star in the railway firmament of the first magnitude, and his life's work conferred untold advantages on all classes in the country. He did for railway passengers what Rowland Hill did in postal reform, and his far-

seeing policy and the courage which he showed in carrying it out marked him as a public benefactor, although at the same time it secured advantages of the most substantial character to the Midland Company. He determined that the great English railways should not be mere sectional monopolies holding dependent districts at their mercy. They were the great national arteries for commerce, and he—the Bismarck of railway policy—was determined that a policy of reform and advancement should be pursued, in the conviction that trade, railways, and passengers would all share in the common advantages. Born on February 27th, 1811, Mr. Allport was twenty-eight years of age when, in the year 1839, he became associated as chief clerk with the Birmingham and Derby Railway. He was speedily marked out for advancement to the position of “carrying manager,” which included with it a salary of £300, and afterwards £400 a year—an “extravagant reward,” as the not over-prosperous shareholders of the time thought, and against which they protested. But his mind was directed towards greater matters than those small details which drew the criticism of the shareholders. The first battle of railway rates ever recorded in history was fought under his régime, when the Birmingham and Derby line entered the lists with the Midland Counties Railway for the through traffic to London; but the war ended in a happy combination and the formation of the Midland Company. Thus it came to pass that the first railway war also brought about the first important amalgamation in railway history. But in this new corporation there was no room for Allport, because, with three sets of officials and the Birmingham and Derby line as the smallest of the three companies, his services could not be utilised. But the Railway King, Hudson, who had a great faculty for selecting the most able men, knew the value of Allport if the shareholders of the Birmingham and Derby line did not. Mr. Hudson, the new Chairman of the Midland, at once transferred Mr. Allport’s services to another of Hudson’s undertakings, the Newcastle and Darlington, in whose service he remained for six years. He was just too late to join in a deputation, headed by Hudson and Robert Stephenson, to Sir Robert Peel to solicit Government aid for the east coast route to Scotland. Allport’s business, however, as the east coast route was gradually pieced together, was to organise a through service of carriages from London to Edinburgh. It was at the period 1845 that Mr. Allport made his famous run from Sunderland to Euston and back with the announcement of Hudson’s election as M.P. for Sunderland. The route was *via* York over the York, Newcastle, and Berwick line; thence to Normanton over the York and North Midland Companies’ line; forward to Derby over the Midland

system, and continuing on to Rugby; and thence *viâ* Wolverton over the London and North Western line to Euston. Special trains were waiting for Allport at each of these points. Mr. Allport, describing the run, said: "Reaching Euston, I drove to the *Times* office, and handed my manuscript to Mr. Delane, who, according to an arrangement I had previously made with him, had it immediately set up in type, a leader written, both inserted, and a lot of impressions taken. Two hours were thus spent in London, and then I set off on my return journey, and arrived in Sunderland next morning at about ten o'clock, before the announcement of the poll. I then handed over copies I had brought with me of the *Times* newspaper of that day containing the return of what had happened in Sunderland the afternoon before. Between five o'clock in the evening and ten o'clock that morning I had travelled six hundred miles, besides spending two hours in London, or a clear run of forty miles an hour."

This was a very wonderful performance, for, without deducting anything for stops *en route*, the whole journey of six hundred miles was done in fifteen hours.

From 1850 to 1853 he was General Manager of the Manchester, Sheffield, and Lincolnshire Railway, which gave him an insight into the resources of Lancashire and the West Riding, which afterwards proved extremely valuable. In 1853, when Mr. Allport returned to the Midland, he inaugurated his great policy, which in the course of years transformed the Midland from a local link or collection of local lines, dependent entirely on other companies for through traffic, into a great trunk system. But these extensions were not initiated and carried through without great efforts. The times were bad, money was hard to raise, and the dividends were small—3 per cent.; but Mr. Allport urged the policy of progress. After the opening of the Leicester and Hitchin line in 1857 Mr. Allport joined the great shipbuilding firm of Messrs. Palmers, of Jarrow, in the capacity of Managing Director. His connection with the Midland Railway, however, was maintained by his acceptance of a seat on the Midland Board of Directors. After two years of retirement from active railway work he, in 1859, returned to the Midland Company, whose fortunes, if not its very existence, was menaced by what is known as the "triple alliance" of its competitors on every side to shut the Midland out from the sources of its traffic. The recall of Mr. Allport from Jarrow, and his resumption of the general managership in 1860, resulted not only in the triple alliance being frustrated, but the eyes of the Midland directors were opened to the perils of the system so long as the Company was at the mercy of strangers. Henceforward the Midland were driven into the pursuit

of a new policy, which must be carried out with great determination, so that the Company might be independent of its neighbours. While this policy of expansion was in progress the panic of 1866 had caused a temporary collapse of the Brighton Railway, and had sent the Chatham and Dover and a host of smaller lines into a state of bankruptcy. At this very critical juncture the Midland had no less than five millions of capital absorbed in unfinished works, which, of course, produced nothing towards dividend; but notwithstanding this, the directors issued a circular in 1867 announcing that the Company proposed to apply to Parliament for a further sum of five millions of capital for new works. The shareholders were almost in a panic; but the calm unfolding of the Midland policy showed that the men at the head of affairs took a wider and more comprehensive view, and their policy was finally adopted and carried into effect. The direct result of this bold and heroic policy at a critical time was soon disclosed; and to the master minds which controlled the Midland system at this period is due the fact that to-day the great trunk system from London to Carlisle is crowded with traffic. Mr. Edward Shipley Ellis, when Chairman in 1874, recalling the events of this period, wrote:—

“It must be remembered that the Midland Railway has grown up under different circumstances from its neighbours. We are often charged, either good humouredly or otherwise, with aggressiveness, but shareholders who have been long connected with the Company will recall how the policy of extension, misnamed aggression, was forced upon us. The Midland system originally formed part of the route from London to Leeds, York, and Scotland *viâ* Rugby and Normanton, and from South Wales to the north *viâ* Gloucester; but the construction of the Great Northern Railway and the extensions of the London and North Western and Great Western Companies deprived us of our through traffic, a project of amalgamation with the London and North Western failed, and the Midland directors and shareholders were left to choose between the policy of making the Midland a complete system, independent of its neighbours, or of remaining as a local line to be gradually starved by our more fortunate competitors on either side. Those who remember the facts will know that this statement is not exaggerated. The policy of extension was adopted and successfully carried out under many difficulties, and shareholders have since had no reason to regret the patience and self-denial then largely drawn upon, or the confidence which they extended to their then directors, and no one who has watched the subsequent development of the districts traversed by our system can doubt the enormous advantages which the public have derived.”

But his master-stroke was the commencement of the conveyance of third-class passengers by all trains; and not only that, for third-class

passengers, who not many years previously had been carried in what were little better than cattle trucks, were to be provided with luxuriously cushioned carriages. Mr. Allport's great revolution was due to his foresight that a multitude of customers at a penny per mile was better than a few at a higher rate. The experiment was a tremendous success for the Company, an enormous advantage to the great mass of the people, and to trade and the country generally. In 1880 Mr. Allport retired from the general managership of the Midland and rejoined the Directorate. On this occasion Mr. Allport took the place of his old friend, Mr. Ellis, on the Board, and the circumstances are set out in the following resolution which was passed on the occasion:—"That Mr. James Joseph Allport be and is hereby elected a director of the Company in the place of Mr. Edward Shipley Ellis, deceased, and that the directors be and are hereby empowered and requested to set aside out of the profits of the Company for the half-year ending the 31st day of December, 1878, the sum of £10,000, and to present the same to Mr. Allport as an expression of the gratitude of the shareholders for services rendered by him to the Company as General Manager during 26½ years, and as an acknowledgment of the exceptional ability, energy, and public spirit which have so largely contributed to the progress and development alike of the Midland Railway and the great industrial districts which it unites."

In 1884 Her Majesty conferred upon Mr. Allport the honour of knighthood, and his death, at St. Pancras Hotel, on April 25th, 1892, full of years and greatly honoured, snapped the last link between the primitive experimental railways of the past and the great systems and organisations of to-day. He was a picturesque and genial personality—a man who did well for his country and for the advancement of the nation, and those who were privileged to pay a last mark of respect at his grave at Belper will never forget the passing of a great railway genius.

MR. G. H. TURNER, the present General Manager of the Company, has distinguished his tenure of office by many reforms and improvements of a very practical character, which have been attended with great success, and his general administration has proved most gratifying from a financial point of view. He began his railway career at the bottom of the ladder, and the greater part of his fifty years' railway experience has been on the Midland system. The story of his career reads like a romance, and forms a notable example of what may be achieved by ability and determination. His entrance into the Midland service was in the capacity of a goods clerk at Bristol in 1853, previous to which he had had some railway experience on the Bristol and



MR. G. H. TURNER.

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Exeter Railway, which he joined on its completion in 1849. After six years' service on the Midland he was transferred to Birmingham, where he became chief clerk at that important depôt. His next step in the ladder of promotion was at Nottingham, where, in 1875, he undertook the duties of Chief Goods Agent, and three years later the position of Chief Goods Canvasser at Derby. So successful were his efforts that he was chosen by the Glasgow and South Western Railway Company for the important post of Goods Manager, and success again crowning his efforts, two years later he re-entered the Midland service to occupy the position of Goods Manager on the Midland line. In this larger sphere he had the distinction, after a period of great depression in trade, of so attracting the stream of returning traffic to the Midland system that the revenues of his department rose to an unprecedented height. Following upon this achievement Mr. Turner, in 1891, was called upon to assist Mr. John Noble in the position of General Manager, Mr. Noble's health having given way under the strain and anxiety of his arduous duties. In May, 1892, Mr. Noble resigned his post, and the directors of the Company called upon Mr. Turner to fill the highest position in this great enterprise in recognition of his most efficient and able administration in many departments of the Company's service. Of ceaseless energy, and possessed of the happy gift of keen business insight, of great knowledge of practical men and of business affairs, Mr. Turner has contributed much to the steady expansion and the continued success of the Midland undertaking. He is a J.P. for the county of Derby and a Colonel of the Engineer and Railway Volunteer Staff Corps. Mr. Turner, in 1900, was elected Chairman of the General Managers' Conference, which represents all the railway companies of the kingdom at the Railway Clearing House.

The importance of the position occupied by Mr. Turner will be better understood by referring to the Chart of Administration, which has been compiled with the object of showing the great departmental system of devolution adopted by the Midland Company and the whole scheme of management and control. From this it will be seen that the General Manager is directly and personally responsible for the whole of the conduct and matters arising in—

- (a) The Superintendent of the Line's department, which includes (1) district passenger agents, (2) district inspectors, (3) train working inspectors, (4) canvassers, (5) stationmasters and staffs of stations, (6) signalmen, (7) passenger and goods guards.

- (b) Goods Manager's department, (1) outdoor assistant, (2) goods agents, (3) canvassers, (4) inspectors, (5) carters, porters, and shunters, (6) veterinary surgeon and staff.
- (c) Mineral Manager's department, (1) coal traffic district agents and staff.

The General Manager, in the discharge of his duties in connection with the traffic department, has associated with him four leading officials, namely, the Assistant General Manager (Mr. E. W. Wells), the Superintendent of the Line (Mr. W. L. Mugliston), the Goods Manager (Mr. W. E. Adie), and the Mineral Manager (Mr. J. Shaw).



MR. E. W. WELLS.

The Superintendent of the Line (Mr. Mugliston) takes command of everything relating to the running of all trains—whether goods or passenger—excepting, of course, the locomotive power, which is supplied by another department. He also controls the arrangement of time-tables, which is in itself a stupendous task little dreamed of by the outside public. For example, there is first of all the ordinary time-tables issued to the public, containing about 200 pages; then there is the private working time-table, issued to the Company's servants only, containing the times of the working of every passenger and

goods train on the whole system. This runs to nearly 700 pages. In addition to this there is what is called the Appendix to the working time-table, which is issued to the servants of the Company at frequent intervals, and this runs to about 450 pages of closely printed matter, giving minute and detailed instructions as to the working of the block system, the number of whistles to be given at every junction on the system, the distinguishing head-light to be carried by engines to denote the class of train to which they are attached, the name of every signal-box on the system, together with its distance from the adjoining signal-boxes in each direction, the loads to be carried by engines over every separate part of the lines and branches, the very important means of signalling by fog-signals during the prevalence of fog—that most

inveterate enemy of railway working, which frequently paralyses even the finest system for days together; also the special arrangements in force in every district of the system whereby a fully competent staff of men to work fog-signalling can be called together at any time of the day or night and be at their post of duty within a few minutes of the call. This volume further contains all the regulations relating to many parts of the system to be observed in shunting or working the traffic, special rules for loading traffic, testing the telegraph wires, and, in fact, it constitutes a great compendium conveying instructions and directions for every circumstance that can possibly arise on the Company's system. There are also the rules for the interchange of traffic with other companies. There is also a supplementary working time-table giving the running of all extra trains that may be required by the exigencies of traffic.

A great railway company, in order to maintain its line in a high state of efficiency, must be constantly repairing and renewing. This work of disturbing the line from its ordinary condition is undertaken only with the greatest possible precautions, not only at or near the point

where the works are being executed, but in giving ample notice to drivers, guards, stationmasters, and all concerned well in advance of the time. This is done in a weekly pamphlet of about fifty pages, which sets out what parts of the line are to be repaired, the alterations in running, the alterations in signals, the erection of new signals, details as to the relaying of the line, and the special regulations for the working of the traffic at these points whilst the work is in progress.

There is further a special excursion train programme for each week, showing the running of every extra passenger train, the times of running, who is to provide the carriages, the locomotive power, and the guards. These regulations apply to all excursion and special trains—race-meetings, football matches, cricket matches, trains for holidays; and then, to crown all, comes a special summer programme.

All these things, of course, are quite outside and in addition to the



MR. MUGLISTON.

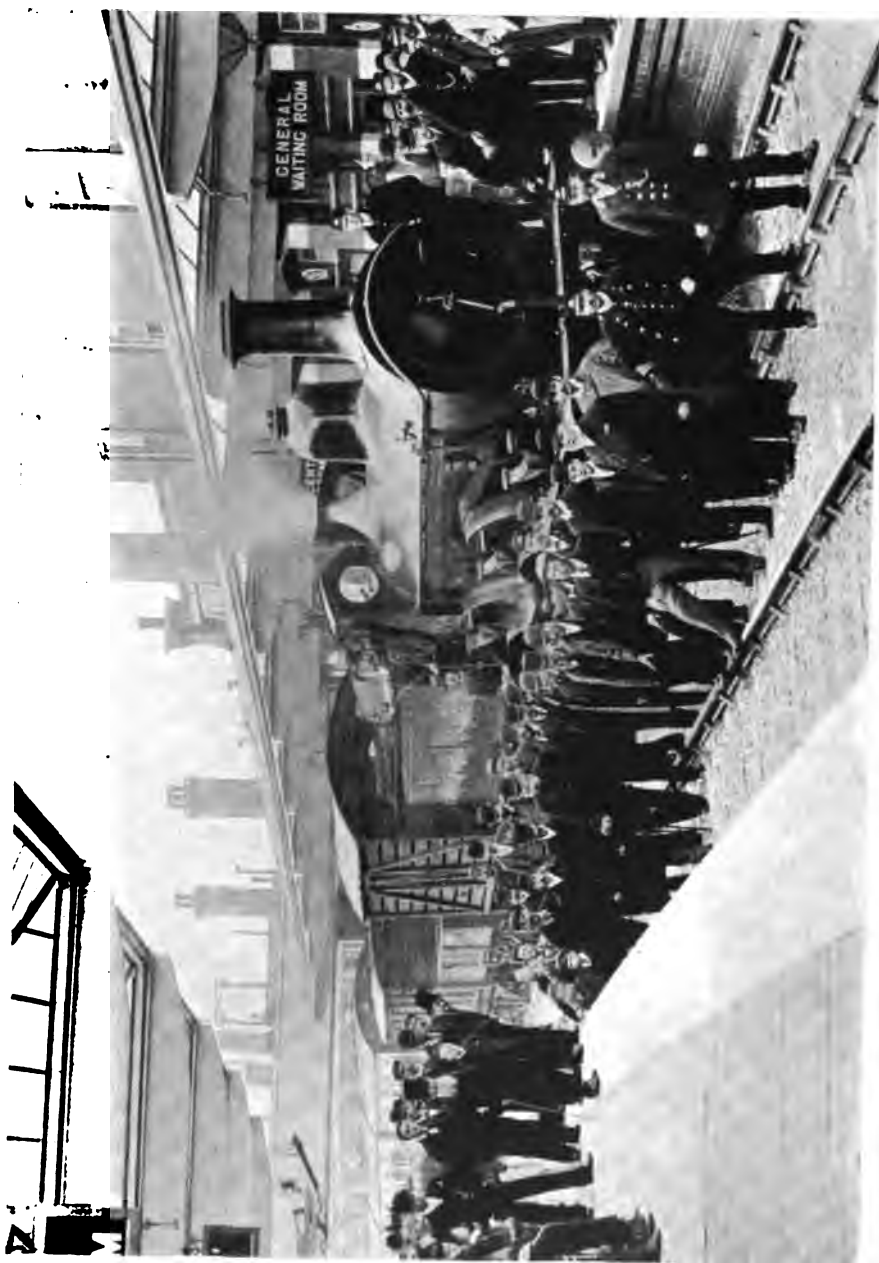
three hundred and odd pages of "Rules," which are signed by the Chairman and Secretary of the Company for the general guidance of all officers and servants of the Company.

The Superintendent of the Line is also responsible for the working of the signal-boxes and the carrying out of the block system and the safe working of the line in all respects.

For passenger traffic the Superintendent of the Line is assisted by five district passenger agents, this devolution having been introduced in November, 1899. These five agents cover between them the whole of the Company's system, the districts being known as London, Derby, Manchester, the North of England, and South Wales. Their duties are generally to supervise the arrangements for passenger traffic in their respective districts, and they meet together monthly to lay the result of their investigations before the Superintendent of the Line and the Traffic Department.

Then come the district inspectors, who take charge of smaller divisions and are answerable for the proper conduct and for everything that happens on the lines under their supervision. All cases of complaint or delay come to their special notice and have to be inquired into on the spot—delays to trains, irregularities in signal-boxes, accidents of all kinds, cattle straying on the lines, level-crossing gates not properly secured, in fact, anything out of the ordinary course of traffic working. The guard of every train makes out a "journal" giving the number of coaches and the times of running of every train, and he has to account specifically for every minute occupied beyond the scheduled time. The importance of this, on a line crowded with traffic, cannot be overestimated, because slight delays to either goods or passenger trains tend most seriously to interfere with the carrying capacity and the earning powers of the lines, and if not promptly checked and obviated would soon lead to serious disorganisation.

These "journals" and special reports give an account of everything, whether ordinary or extraordinary, relating to the working of each train, and they must reach the Superintendent of the Line not later than 9 a.m. on the following morning. Here they are examined by a staff of clerks, and those which record delays or anything of an irregular character are sent to the district inspectors. In addition to this the district inspectors also get reports through the Superintendent of the Line, who has received them from the stationmaster or signalman in the district where the occurrence or delay of whatever character has taken place, giving their version of the cause. The district inspector must then go to the whole of the parties concerned, inquire into the facts, and report without delay to the Superintendent of the Line.



THE PRESENT STATION, GLOUCESTER. THE FIRST TRAIN LEAVING.

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In addition, the district inspectors have to visit every signal-box in their district and see that everything is in order, and that the work is being efficiently performed—these visits being made both by day and by night. These district inspectors have an assistant inspector under them, but the district inspectors have no fixed hours of service; they have to be available at all times of the day and night—it must be known at all times where they can be found; and whenever anything unusual or of a serious or important character occurs the district inspectors have to be called at once to the scene, and they must remain in charge until the difficulty is removed.

There is also a staff of train-working inspectors, whose duty it is to travel by either goods or passenger trains which frequently lose time in order to ascertain the cause, and they have to present special reports as to the best methods of overcoming the same.

The stationmasters are—to transpose their name—"masters of the station," and their duties and responsibilities vary in a most remarkable manner according to the size of the station and the amount of traffic. Stationmasters at large centres, such as St. Pancras, Leicester, Nottingham, Leeds, Bradford, or Sheffield deal with passenger and parcels traffic only. A stationmaster at such places has a very large staff under his control and for whom he is responsible; he has to receive and distribute large sums of money for the payment of wages, amounting in large districts to several thousand pounds per week. He is also primarily responsible for all the money taken and collected at the station, and for its being promptly banked and accounted for; he has also to manage the staff at his station so as to deal adequately with the requirements of both day and night traffic. Sunday and weekday he has the control of all the trains whilst they are at the station or within station limits; he has the control of the signalmen in the boxes within those limits, which vary from three to twelve boxes. He is responsible for the conduct of the parcels and milk traffic in the parcels department; he is responsible for the conduct of the booking-offices, for all stores supplied to the station and their proper use—books, stationery, coal, oil, brushes, etc. The whole of the passenger guards are under his control, and he has also to look well ahead to provide the necessary coaches for extra trains which only run on certain days of the week, as well as for special trains provided for in the excursion programme, and also special trains ordered by telegraph. He is responsible for the proper conduct of the whole of the rooms of every kind at his station, the cab-stands, the out-porters, the lifts, the passengers' luggage, the mails, and he has to specially report upon complaints of all kinds, so far as the station working is concerned. His duties are manifold, and

he is being constantly required to give a decision on all manner of questions, both verbally and in writing. Above and beyond all this, he is responsible for the safety of every passenger arriving, transferring, or departing from his station—a matter of no light importance and concern in times of great pressure of traffic with crowded platforms; and to him applies with special force the rule which says, “The safety of the public must, under all circumstances, be the chief care of the servants of the Company.” A stationmaster is in very close touch with the public, and he has come to be regarded almost as a public functionary. The skill and diplomacy with which a stationmaster discharges his duties have a very important influence in attracting traffic to the line. He has also to encourage his staff in the careful and diligent performance of their important duties; he “coaches,” “trains,” instructs, and examines members of his staff who have ambition not only to get on, but who have displayed zeal and ability in the performance of their duties, and who are worthy of encouragement. This is of very great value and importance, because it not only provides an incentive for the faithful and punctual discharge of their functions, but tends to promote that vigilant supervision which is so essential not only for the safe and proper working of the railway and the comfort of the travelling public, but the promotion of the Company’s interests.

These observations and these details of the duties of a stationmaster apply to all the large stations in the Company’s system.

It has been pointed out that the stationmasters at large centres deal only with the passenger and parcels traffic; but the stationmasters at small stations have to be a sort of “all-round, handy men” who know everything about their districts, and undertake the supervision of passenger, goods, and mineral traffic.

Taking an extreme illustration at the bottom of the tree, there is an instance on a small single line with little traffic where the stationmaster is the sole representative of the Company at the village, and his duties comprise stationmaster, porter, signalman, gateman, ticket-clerk, goods and mineral agent, and weighing-machine man—combining all these offices in his own person.

There are also what are called station agents, who at various points perform very important functions where there are competing lines, and who are, for all practical purposes, as far as the Midland are concerned, really stationmasters. They are the representatives of the Company on lines and at stations where the Midland has running powers. They have to look after the Midland traffic and interests generally, but, of course, they have no control over the station, or the station staff, or its working. They, however, have to see that the company which furnishes

the running powers finds the porters and all the necessary facilities for working the trains required. These agents are stationed at such places as Carlisle, York, Bristol, Cambridge, Worcester, and Peterborough.

The entire train service, both goods and passenger, is regulated and alterations from time to time determined upon as may be deemed necessary to cope with the traffic, such alterations, regulations, and additions being based upon the reports of all the functionaries or officers whose duties we have been describing to the Superintendent of the Line. He carefully dissects all these, and after full investigation he submits his reports and recommendations to the General Manager, by whom they are finally decided after he has laid the most important questions before the Traffic Committee for approval and confirmation. Thus it comes to pass that no great change or any ill-digested schemes or alterations can ever be brought into practice ; and it is only after the fullest consideration and precaution, and the due weighing of all the facts and conditions to be dealt with, that they are brought into practical working. It is by reason of these rather elaborate schemes of forethought that the running of unnecessary trains is avoided, and also the consequent waste of expenditure which would otherwise arise ; and further, it also explains and accounts for the smooth and automatic way in which these alterations which are brought into practical working are effected without any disturbance of the previously existing train service. These improvements fit in with a nicety of detail and work in perfect harmony ; all this is due to the care, the forethought, and the systematic way in which they are brought into being.

The alterations are not made for the mere purpose of bringing about changes ; they are brought about by the actual pressure of traffic, or the snowball-like way in which certain trains attract and develop traffic *en route*, which forces its attention on the responsible officials.

Thus, a new train may be required because a previously existing express has come to consist of so many coaches that two engines are necessary almost every day ; or it may be that a rival company has introduced or is about to introduce a new competing train, which it is necessary, in the Company's interests, to checkmate in order to retain its own traffic and position ; or there are cases in which important traders or large firms put forth pressure and run sufficient traffic to induce the Company at least to give a trial to a new train for specific purposes, and as far as possible to meet public requirements. In all these cases the Superintendent of the Line receives the reports on the subject from the stationmasters, the passenger agents, the goods managers, or the district inspectors, as

the case may be ; and when he has reduced all these into a practical shape he himself draws up a report as to the probable number of passengers, the best times for starting and arriving, the best stations to stop at *en route*, the number of coaches required for the train, the kind of carriages, and whether they are to include breakfast, dining, or sleeping cars. After all this has been done his scheme is submitted to the General Manager, who, if he is satisfied that it is a proper arrangement, submits it to the Traffic Committee, who finally dispose of it. If the proposed train is to run over any other company's line on any part of its journey, or is to run into any other company's station, or is to work in connection with the trains of other companies, it is necessary to obtain from such companies their sanction, and they must be consulted and the details made to fit their views and the exigencies of their traffic. In working a new train into practical effect it is necessary to provide a "balance" or return train in the opposite direction, in order that the engine, coaches, and men can be brought back to the station from which they originally started. This raises another problem of discovering the best time for the new train to be put on for the return journey. When this has been arrived at the Superintendent of the Line then communicates with the Locomotive Department, giving the times of the new train in both directions, and requests the Locomotive Superintendent to provide the required power. Then the Locomotive Superintendent takes up the matter and provides for the engine and the best means of utilising not only the power but the time of the men in charge. The Carriage Superintendent has also to be consulted as to the necessary vehicles and how they are to be provided. Of course, if he has sufficient vehicles in stock there is no further trouble ; but if they are required to be of a new and special character of which the Company does not possess more than are necessary for actual requirements, the question of the construction of new railway stock must be brought before the Carriage and Wagon Committee. It is these requests for new trains—whether passenger or goods—by the General Manager that necessitate and determine the applications which the Locomotive and Carriage Departments have to make from time to time for more capital to be expended on additional engines, carriages, or wagons. But before this new capital is expended the General Purposes Committee, which looks so carefully after the interests of the shareholders, and which Committee consists of the whole of the directors, finally decides whether the new stock or engines are absolutely necessary, and that the expenditure is a wise one in the interests of the Company and to meet the necessities of the traffic.

It will thus be seen that it is no light and easy matter to arrange for the introduction of new trains, as is sometimes imagined by the general public, who often apparently think it the easiest thing in the world to slip in a new train for their special benefit and convenience at any hour of the day.

When a new arrangement does come into force and the time-tables are printed, the alteration works smoothly and automatically without friction of any kind and without disturbance to other trains on the railway, from the fact that the arrangements have been so carefully planned and worked out in a systematic manner; and although the line is crowded with traffic, there is no dislocation of the facilities which previously existed.

The Advertising and Literary Department, under the supervision of the General Manager, deals with a great variety of detailed work, which is admirably carried out by Mr. T. C. Jeffrey.

THE GOODS DEPARTMENT

The second division of the Traffic Department is the Goods, but, as already explained, the Goods Department has nothing whatever to do with the running of the trains, which are all dealt with, as already explained, by the Superintendent of the Line.

The Goods Department is under the charge of the Goods Manager (Mr. Adie), and it is one of the chief and most important in the Midland system, the Midland having an enormous goods traffic at every station on the line. At the large stations the Goods Manager has special goods agents, and at small places the stationmaster combines the duties, as already explained. The staff under the Goods Manager is a most extensive one. He is assisted in his far-reaching duties by an Assistant Goods Manager, an outdoor assistant, goods agent at every station (some 600 in number), canvassers, inspectors, veterinary surgeon and staff, carters, porters, shunters, and a whole army of clerks.

The outdoor assistant has to control and look after the whole of outlying goods sheds, warehouses, yards, and their management; and he has generally to superintend the local goods agents in each town. The carting, the horses, and similar things also claim his attention.

In the case of passenger traffic, the passenger, when he is booked loads and unloads himself and there is an end of the matter; but with goods it is far different. The goods have to be collected, signed for, loaded, conveyed, unloaded, delivered, and a receipt taken, besides which there is the collection of the charges for the carriage. Goods and

general merchandise fall into the ordinary regular groove, although even in their case there is an enormous amount of clerical work to be performed and permanent records kept of all transactions from the time that the goods are received from the consigner till their delivery to the consignee.

But in addition to this there are many branches of special traffic which come under the designation of goods. Thus there are cattle to be dealt with, and meat to be conveyed in refrigerating vans, armour plates, guns, boilers, girders, which all require special and particular arrangements to be made either for collection, conveyance, or delivery, or for all three combined, and special wagons have to be provided to convey unusually heavy weights and materials of exceptionally large size—the latter of which are only conveyed under special circumstances.

Great care has also to be exercised at all points by the Goods Department as to the "loading gauge" and the secure loading of wagons under ordinary and exceptional circumstances.



MR. ADIE.

The enormous shipping traffic sent to or conveyed from the docks at great centres—London, Liverpool, Bristol, Gloucester, Swansea—demand great administrative ability, as the goods come from and go to the uttermost parts of the earth. Then again, there is the exchange of

traffic with other companies, both sending and receiving, which requires great care in its manipulation. The great complication of accounts which is thereby entailed between the Midland and the other railway companies as to carriage paid in advance and carriage collected at the destination in both directions—sending and receiving—and the proportion *pro rata* according to the fixed scale and regulations of the charges due to each company is dealt with by the Clearing House; but at the same time it entails great care and accuracy in registering the proportions due to the Midland account by the goods clerical staff.

Once a month the goods agents from all parts of the Midland system meet at Derby and have a conference with the Goods Manager

as to the general conduct of the traffic in their respective centres. Each district agent lays before the head of the department the matters which arise in his district, especially relating to traffic which the Company may be losing or which they consider they might obtain, and also the actual competition and threatened competition by other companies. The main object of the conferences is for the Goods Manager to ascertain that all sources of traffic are thoroughly tapped ; also to discover the best means of looking after the growing trade and the new business which is being constantly developed. How important this is may be gathered from the fact that during the last half of the year 1899 the *increased* traffic receipts from merchandise alone amounted to no less than £73,296 over the corresponding six months of 1898, while the total receipts from merchandise during the last six months of 1899 amounted to £2,484,023 10s. 5d., which practically shows a revenue of about £5,000,000 per annum from this one department.

The Goods Manager has also to attend the conferences in London of the Clearing House, which take place between all the goods managers of the kingdom. Views are exchanged and united action is decided upon by all companies as to rates for ordinary and special traffic. Nothing is more complicated than the question of railway rates, and even after the most careful arrangements, the matters in question have frequently to be threshed out in a court of law before certain traders will be satisfied.

There have to be special or preferential rates for shipping traffic or else it would cease to exist. Special rates have to be conceded for goods of comparatively small value or that traffic would be strangled ; the competition with canals has also to be taken into account ; and practically all these important and complex questions have to be determined by the goods managers in conference, and their decisions finally confirmed by the general managers of each company and their traffic committees. These conferences are to ensure joint and uniform action, to fix a fair and reasonable rate for specified goods for given distances, and to prevent a state of utter chaos and confusion and a war of rates which would otherwise result.

In addition to all his duties in the effective superintendence of all those great goods depôts dealing with such an enormous traffic in all parts of the country, the Goods Manager is also charged with the supervision of a whole army of clerks, porters, shunters, loaders, and carters ; he has to arrange and is accountable for the purchase and distribution of all horses for carting and other purposes—their stabling, feeding, doctoring, and re-sale when their railway days are over. The

horses owned by the Midland number 5,767, and as they are invariably powerful and costly animals of a high class, the Veterinary Surgeons' Department, under the Goods Manager, has to be conducted with great skill in order to obviate waste in the feeding or in the utilisation in their very valuable horseflesh.

The merchandise traffic of the great railway companies of the kingdom is in very deed and in very truth the daily bread of the great mass of the population of our great towns—London especially. Without this great and ever-increasing inflow of what is known as perishable traffic forwarded by express goods trains, some of which run at passenger train speed, and arriving at the great centres of population at fixed and regular hours early in the morning, conveying meat, vegetables, fish, milk, and in fact all the necessities of daily life, so as to be available in the shops on their opening in the morning, London and the great towns would be almost as bad as a beleaguered city in forty-eight hours—so close and hand to mouth has the supply become owing to the great regularity of the railway traffic.

It will be seen from these facts and considerations that it would be altogether impossible to close railways for all traffic on Sundays. Efforts are made from time to time by certain well-meaning persons, who would, if they could have their way, entirely close the whole of the railways of the country upon Sunday. While being as strongly opposed as anyone to the running of unnecessary trains upon that day, and adopting the view that men who are obliged to work on Sunday should be properly paid, and arrangements made to give them a day of rest during the week, it is hardly necessary to point out that a certain number of passenger trains and the mail trains must be run upon the Sunday. Probably few persons will say that the workers in our large towns, who are all the week shut up in factories and works, have not the right to have special trains run to the seaside in order that they may for a few hours on the Sunday have the benefit to health of a change and the breathing of pure air. Some people will perhaps say this is all very well, but why run Sunday goods trains? Probably the general public does not know nor consider what is contained in these goods trains, nor what would be the result if they were delayed or stopped for twenty-four hours. The heavy "fast goods trains," composed of covered vans or wagons sheeted over, which may be seen making their way up to London on Sunday, consist almost entirely of "perishable food traffic," such as fish, meat, milk, fruit, game, eggs, butter, bread, and the like. London, with its five millions of people, has practically no reserve of food on hand—it relies from hour to hour upon the arrival of these fast goods trains for its supplies.

If it were possible for one Sunday to stop these trains running for twenty-four hours, the result would be that on Sunday and Monday morning the people of London would be starving. The exact total value of the food carried by all the lines into London on Sunday is great, and taking that over the Midland only it is worth about £30,000 each Sunday.

Now, in view of such facts as these, is it likely that the people in large cities are to be starved, and many thousands of pounds' worth of good food to be allowed to go bad and be unfit for the food of man just to save the running of goods trains on Sunday? Then, again, there is the cattle traffic. Many hundreds of wagons of cattle are sent



LAWLEY STREET GOODS YARD, BIRMINGHAM.

off on Saturday afternoon to London from Scotland, from Ireland *via* Liverpool, and other parts; and the trains do not arrive till Sunday. If the lines were closed, what is to be the result? Surely no one will wish the poor animals to be shunted into sidings at twelve o'clock midnight on Saturday, there to wait for twenty-four hours! The fact of the matter is that the more our large towns grow the more food they require; consequently the more they have to depend upon fast goods trains for their supplies, and it is therefore clear that the fast goods traffic on Sunday is destined to increase rather than decrease. It is very easy indeed for the advocates of Sunday closing of railways to bring forward a theory, but the food-supply question is a very large and important one which must be faced, and shows that the whole notion of shutting up railways on that day is not a practical one.

THE MINERAL DEPARTMENT

The third section under the supervision of the General Manager is the Mineral Department, which is under the control of Mr. Shaw. Minerals include the conveyance of coal, coke, granite, ironstone, and lime; and the conditions under which such traffic is worked are very varied and rather complicated. For example, almost all collieries served by the Midland Company have competing lines for their traffic; there is also the competition of canals in a great many cases, and in this particular department it is very keen on account of their low rates and their small expenses. Some of the collieries and quarries are close to the Midland lines, whereas others have their own branch lines of considerable length to connect them with the Midland. In some instances the Midland send their engines to the pits to fetch the coal; in others



STANDARD GOODS ENGINE.

the colliery owners provide their own locomotives. Then, again, some collieries hire Midland wagons, while other collieries provide their own.

At the delivery end of the journey the arrangements are equally varied. In some instances the Midland Company provide their own coalyards and sidings from which the owners of the coal unload wagons; in other cases the Company has coal depôts of its own fitted with special drops, lifts, and shoots, and appliances for transferring the coal into the various private owners' drays or carts, as the case may be. Again, some of the large colliery firms have their own drops and do their own unloading; and in the case of docks, the dock companies and harbour boards frequently provide their own locomotives and staff both for transferring and unloading purposes. All these different conditions have to come under the review of the Mineral Manager, who is responsible for full and adequate arrangements being provided under each system, and he is further charged with the duty of seeing that all the special rules which relate to them are strictly observed.

Very few of the public have any conception of the difficulties in the way of supplying such huge centres of population as London with coal. The cost of land at the various points required is so enormous, and the difficulties in the way of the expansion of the depôts so great, that the ordinary easy-going coalyards with wagons standing about for days together is altogether out of the question. It is a case of getting in and out again with the utmost rapidity, so that the greatest amount of traffic possible may be got out of the smallest possible depôt in the shortest space of time. How stupendous these difficulties are can only be adequately conceived by those who have the actual working of the traffic, which has to pass, be it remembered, over an intermediate or foreign line of railway linking the depôt with the Midland system, and which link is closed entirely for the receipt or despatch of mineral trains during a good many hours of the day.

As an example of working a coal depôt take Walworth Road, London. Here is the special rule which governs its traffic:—



MR. SHAW.

"At Walworth Road only one mineral train can be dealt with at the same time. The foreman on duty at Kentish Town will be held responsible for taking care that a second mineral train is not allowed to leave Kentish Town for Walworth Road at a less interval than one hour after the preceding train."

This means that a previous train of sixteen wagons must be unloaded and returned back within the hour from Walworth Road to Kentish Town; and with 10 tons of coal in each wagon, this gives 160 tons of coal which must be dealt with in the course of an hour, the wagons cleared and shunted, and the depôt clear for another train. This is an example of not only what is possible, but what is absolutely necessary to be achieved in order to ensure, by a happy combination, the regular and smooth inflow of coal traffic to a depôt.

Whilst these are the general surroundings, they are involved in a mass of detail with hardly two cases alike, there being so many special conditions of actual service rendered and distances covered, together

with a supply of locomotive power and wagons so very varied, and the rates and charges governing them depending on so many special Acts of Parliament which have been passed at various dates, and including so many particular rates both regarding the class of traffic and the divisions of the line over which it is carried, that the utmost care has to be observed in working them out. The great and paramount duty of the Mineral Manager is to secure a continuous flow of mineral traffic all the year through and on all branches of the system; and where there is so much competition and so many changes taking place this requires constant watchfulness in order to conserve the Company's interests. The arrangements and agreements made between the Midland Company and its customers have to be most carefully considered.

The consignors of the minerals invariably load the wagons at their collieries or quarries with their own staff and at their own cost. Where the colliery owners provide their own locomotive power and sidings they convey the traffic to a given point on the Midland line, where it is handed over to the Midland Traffic Department, which comes under the control of the Superintendent of the Line, who deals with it till it reaches its destination. Where the Midland Company provide the locomotive power on private owners' sidings the traffic is handed over as the wagons are coupled up, when the Midland engine and guard take charge of it. The Mineral Manager has not only to arrange for obtaining traffic and the terms upon which it is to be carried, but has also to see that an adequate number of wagons is provided at each point, and he has to indicate to the Superintendent of the Line at which point wagons are most urgently required in order that the Traffic Department may adequately respond to the exigencies of trade.

The minerals having been conveyed to their destination by the Traffic Department, they again come under the control of the Mineral Manager, upon whom rests the responsibility of prompt delivery or being promptly placed at the disposal of the consignee, and that the wagons are speedily unloaded and again sent back for reloading. The consignees have to be advised that the minerals have arrived, and in cases of delay in unloading, demurrage on the wagons has to be notified and charged for. The whole of the work of delivery is done by the consignees as far as emptying the wagons and the taking away of the minerals are concerned. The Company weigh the vehicles as they enter the yards or depôts and again as they depart loaded, and these weights are checked by the weighing of the railway wagons and their load at the most convenient weighing machine on the Midland system near the collieries or quarries. The Mineral Manager is also charged with the duty of seeing that the appliances, the coal shoots,

and the sidings are sufficiently large and adequate for dealing with the Company's traffic, and that they are utilised to the utmost advantage. Where new appliances or sidings are required he has to report to the General Manager as to the necessities of the case and the best way of meeting them. Of course, the General Manager has special district agents at all convenient points and centres both of collection and delivery.

The mineral traffic on the Midland Railway yields a revenue of practically £3,000,000 per annum.

CHAPTER XXXI.

FINANCE DEPARTMENT

WE now pass on to the second great division of the Company's administration, namely, the Finance Department, which is controlled by a committee of five directors. It is subdivided into three separate divisions, namely :—

- (1) The Secretary's Department.
- (2) The Accountant's Department.
- (3) The Rating Surveyor's Department.

The Secretary (Mr. Alexis L. Charles) is the legal representative of the Company, and as we read in the old Acts of Parliament, he is the person to sue and be sued. His great business is to keep the minutes of all meetings of the Board and various committees, as well as of all meetings of the shareholders. He also has charge and is answerable for the correctness of all the registers of stock, shares, debentures, loans, and all transfers in the transfer department. He has as chief officers an assistant secretary, a chief cashier, and a rent-collector, as well as a large staff of clerks in the various departments of which he has charge. When new capital is to be issued it is he who places it upon the market under the general direction of the Finance Committee. All transfer deeds come under his supervision, and he deals with all the correspondence relating to the Financial Department of the undertaking. He has to issue and sign all legal notices. He is, in addition, one of the largest holders of licences in the kingdom, having, in his capacity as Secretary, to take out year by year the licences for all the hotels and refreshment-rooms at the various stations on the whole system. His name, too, appears over the doors of these various buildings, and it will likewise be found on every cart and delivery van owned by the Company. All conveyances of land and property to the Company are under his custody, as are also all the Acts relating to lines purchased and all the agreements entered into between the Midland and other companies.

The following is a list of the secretaries from 1844 to 1900 :—

J. F. Bell	Appointed May 24th, 1844	Resigned Oct. 1st, 1853.
Joseph Sanders	„ Oct. 1st, 1853	Died Nov. 14th, 1856.
G. N. Browne	„ Jan. 7th, 1857	Died June 11th, 1868.
James Williams	„ Dec. 2nd, 1868	Resigned May 19th, 1899.
A. L. Charles	„ June 16th, 1899	—

MR. JOHN FOX BELL, who was the first Secretary of the Midland, was originally Secretary of the Midland Counties Railway at Leicester. Upon him fell a large share of the responsibility connected with the carrying through of the amalgamation. He continued in office until October 1st, 1853, and he subsequently became a director of the Company.

MR. JOSEPH SANDERS, who had previously been Secretary of the Birmingham and Derby Junction Company before its absorption in the Midland, was appointed General Superintendent of the management of all trains in the coaching department in July, 1849, and in 1850 he became General Manager. But on October 1st, 1853, he gave way in the general manager-ship to allow Mr. Allport to assume the chief command as General Manager at a very important period in the develop-



MR. CHARLES.

ment of the Midland. On vacating this office he was appointed Secretary of the Company, which he held until the time of his death in 1856.

MR. G. N. BROWNE, his successor, was Secretary from 1857 till the time of his death in 1868.

MR. JAMES WILLIAMS, who is a justice of the peace for the borough of Derby, was born at Helston, Cornwall, on April 9th, 1830. He commenced his business career with the Bodmin and Wadebridge Railway, now the property of the London and South Western Company, in 1844, and joined the East Lancashire Railway in 1849, remaining with that Company until 1852, when he entered the service of the Manchester, Sheffield, and Lincolnshire Railway shortly after

the appointment of Sir Edward Watkin as Chairman of the Board of Directors. He severed his connection with the Sheffield Company in 1856, having been offered the position of Accountant to the West Midland Railway. Shortly after his removal to Worcester the undertaking was amalgamated with the Great Western, and he joined the executive staff of that Company at Paddington. In 1867 Mr. Williams was selected as one of the members of the Commission appointed by the Treasury to inquire into the financial condition of the Irish railways, with a view to their purchase by the Government, under the Act of 1844. On the conclusion of the work of that Commission, in 1868, he was chosen from amongst a large number of applicants to succeed the late Mr. G. Newton Browne as Secretary to the Midland Railway Company, and commenced his duties on January 1st, 1869. Mr. Williams' resignation was accepted at a meeting of the Board on May 19th, 1899.

MR. ALEXIS LÉON CHARLES, the Secretary of the Company, was born at Nottingham on February 3rd, 1851, educated at the Derby Grammar School, and entered the Midland Railway's service as junior clerk in the Accountant's Department, September 12th, 1865, being transferred to the Secretary's Department as clerk in charge of the stations cash accounts, December 1st, 1866. He was appointed shorthand writer, July 1st, 1869; chief assistant, January 18th, 1883; assistant secretary, July 17th, 1891; and Secretary, June 16th, 1899.

Mr. Charles is well known as a public man at Derby; and his leisure hours are fully occupied in the promotion of various philanthropic objects. Among the offices he fills it may be mentioned that he is Chairman of the Board of Trustees of the Liversage Charity, which distributes about £3,000 per annum amongst the deserving poor of Derby; he is churchwarden of St. Andrews; he is a director of the Derbyshire Permanent Building Society; member of the Council of the Institute of Secretaries; member of the committee of the Railway Benevolent Institution; member of the committee of the Railway Servants' Orphanage; Chairman of the Railway Servants' Orphanage Concert Committee; Chairman of the Board of Managers of the Westhouses Railway School; Chairman of the Litchurch branch of the National Deposit Friendly Society; Vice-President of the Midland Railway Temperance Union; and Vice-President of the Midland Railway Natural History Society.

Mr. Charles is also Secretary of the Somerset and Dorset Railway Company and Secretary of the Tottenham and Hampstead Railway Company.

Upon the Accountant (Mr. John James Doughty) falls the care and charge of the whole of the accounts of the undertaking; and he signs and certifies them in conjunction with the Chairman of the Company. As these accounts deal with over £100,000,000 of capital and with a revenue of about £11,000,000 per annum, and a working expenditure of about £6,700,000 per annum, which revenue is obtained from many sources in great detail, and which expenditure is laid out over a wide area and in an endless variety of ways, the Accountant's duties call for the very highest administrative ability, care, and accuracy. He has as chief of his staff an assistant accountant and a number of inspectors and auditors. He is responsible for the whole of the monetary transactions of the Company, and the daily, weekly, and monthly, and the final half-yearly returns from all stations and depôts on all parts of the system; and the whole of these complicated accounts from all these various quarters have to be certified as accurate and balanced to a half-penny. He has not only to be responsible for the accuracy of his own accounts at the headquarters at Derby, but he has also to testify to the correctness of the financial transactions at all points where money is received or paid.



MR. DOUGHTY.

Every ticket sold has to be recorded in a ticket-book by the booking-clerk, every parcel or package of goods has a counterfoil to show every receipt, and at the end of every day each man receiving money has to pay in the money either to the stationmaster or the responsible official by whom the books and the cash are verified, and the cash forwarded the same evening in a box to the station, from whence it is transferred to the bank. Consequently the accounts are completed each evening at a certain hour, and it therefore follows that when the auditor sends one of his inspectors or auditors to examine the books and papers at any given station or goods depôt, as he does at unexpected times, the whole of the transactions at that station have to be perfectly clear and correct up to date. The inspector or auditor can immediately

prove that that is the case by an examination of the train-book, parcel vouchers, stationmaster's cash-book, and the receipts from the banks or audit department. After each audit or investigation at a local station the inspector signs the books, and ticks off the items; and he therefore knows at his next visit the transactions which have taken place in the interval.

All receipts from the various sources of traffic, passengers, merchandise, minerals, cattle, and miscellaneous sources are all kept separate and distinct, so that the whole can be most carefully compared from time to time with the receipts at corresponding periods in corresponding half-years, and the why and the wherefore of any alteration carefully inquired into.

The payment of wages is accomplished in this manner: Each man's time is recorded when he comes on duty and when he leaves by he himself signing on and off duty in rotation of time, and if he is in daily, weekly, or monthly payment, his rate of remuneration is recorded. The time-sheet is prepared by the stationmaster, district locomotive superintendent, the goods agent, or other chief official having the name of each man in his department, together with the time and rate of wages and the amount due to each man in his department; and this is recorded on the pay-sheet, and sent in to the heads of the various departments at Derby. Having been examined and certified as correct, the money for the payment is transmitted to the various stations and departments, and the head official locally is responsible for the due distribution of the money. This having been done, the proof that the wages are actually paid is furnished to the accountant.

In conjunction with the Secretary and the Finance Committee the Accountant advises on the general financial policy of the Company. Occasionally this involves a great amount of wise discrimination and great forethought on the part of all concerned, as, for instance, when, by the Act of 1897, the £100 ordinary shares of the Company were converted into £200 shares, namely, one £100 share of $2\frac{1}{2}$ per cent. preferred ordinary stock, and another share of £100 deferred ordinary stock, which gave this great advantage, that investors, widows, retired officers, and persons with a fixed sum of money at their disposal, who were unwilling or legally disqualified from investing in more or less speculative business, could, by purchasing these $2\frac{1}{2}$ per cent. preferred ordinary shares, thereby ensure a steady, regular fixed income which would practically be quite as safe as consols, as well as paying a slightly better interest. The holders of the other shares were placed in the position of receiving whatever balance of revenue remained after the payment of the $2\frac{1}{2}$ per cent. as the interest for their investment. By

this Act the capital of the Company was nominally increased by £35,434,947. This scheme, which was most successfully carried through under the able guidance of the Chairman of the Company, had the enormous recommendation that whilst it conferred privileges and advantages on all the shareholders it entailed disabilities and disadvantages on none ; and in addition to all this it tended to increase the number of small shareholders, thus extending the number of those interested in the success of the Midland. There were numbers of persons who were able and willing to invest in shares of £100, but who had not the means of purchasing £100 shares which stood at a price of £180.

The third division of the Finance Department is that of the Rating Surveyor, which is in charge of Mr. W. P. Payne and his staff. The duties of this official may at first sight appear to be of a routine character, but when we consider the great number of parishes that the Midland line passes through, and to each of which it has to pay tribute, it will be seen that enormous complications must arise, as the Midland is one of the largest ratepayers in the kingdom. The Company's bill for rates and taxes (not including income tax, which is deducted from every shareholder's dividend) amounts to no less than £345,000 per annum, in addition to which it has to pay a Government duty of about £14,000 per annum. In other words, the Midland Railway Company has to pay over in rates and taxes about £1,000 every day, including Sundays. This large sum is composed of many items, the rates in some large towns amounting to as much as £8,000 to £10,000 per annum, whilst in others it is a comparatively small amount. But the sums to be paid are the subject of much negotiation, and sometimes even litigation has to be resorted to in order to effect a settlement, comparatively small parishes through which the line passes occasionally imagining that their little bit of territory is necessary as a connecting link, and that therefore a sort of "way leave" in rates and taxes ought to be exacted from the Company on all traffic passing over the lines.

All these arrangements require to be negotiated with great diplomatic acumen, so as to preserve the interests of the Company and not to unduly wound the susceptibilities of the parishes that may be in question. The rates vary almost as much as the value of land, say, in London as compared with pastoral land in the wilds of Cumberland on the Settle and Carlisle line ; and the mastery of all these details can only be acquired after very long actual experience, combined with natural aptitude for the work.

CHAPTER XXXII.

THE LOCOMOTIVE DEPARTMENT

THE third great Department of the Midland Company is that which deals with locomotive power, which since July, 1873, has been under the control of Mr. Samuel W. Johnson. The Locomotive Superintendent is charged with duties of a very comprehensive character, which include the designing, construction, and maintenance of all engines (both locomotive and stationary), the machinery and appliances in the great works at Derby and all outlying depôts, and the working of all engines in the running of trains. His duties also include the supervision of 305 stationary engines, 270 stationary boilers, 1,030 hydraulic machines, 420 cranes of every kind, the construction and maintenance of turntables all over the system, water columns, water-tanks and pumps, and water-supplies generally. The Locomotive Department is also responsible for clearing the line in case of accident, and for providing break-down trains and all appliances for the purpose. Fire brigades, gas supplies, and weighing machines all come within the purview of the Superintendent's office. The Midland Company have now more locomotive engines running on their system for the working of traffic than any railway company in the kingdom. On August 1st, 1900, the number of engines stood at 2,610, which were charged to capital account, and over 200 on the "A" or duplicate list, which are charged to revenue, which, added to the above number, give a total of 2,810 locomotives. Besides these he has the control of the engines which are the joint property of the Midland and Great Northern Railway Companies running on the Eastern and Midland Railway, 82 in number, and those which are jointly owned by the Midland and South Western running on the Somerset and Dorset Joint Railway, which number 70, so that altogether, with the engines now on order and being constructed, the Locomotive Superintendent has control of no fewer than 3,000 locomotives, all in effective working order.

It is necessary to point out that in 1844, just prior to the amalga-

tion, the three companies had a total altogether of 95 locomotives, which were managed by three locomotive superintendents, and which engines were transferred to the sole care of Mr. Matthew Kirtley, the first Superintendent of the Midland, and who was Mr. Johnson's immediate predecessor. Thus it comes to pass that Mr. Matthew Kirtley saw the locomotives of the Company increased during his reign at the Locomotive Department from 95 to 1,069, while Mr. Johnson's administration has expanded the number from 1,069 to over 3,000, in addition to which he has had the whole of the previously existing engines either entirely replaced by new ones or rebuilt. Rebuilding in practice on the Midland means that a new boiler, fire-box, smoke-box, and tubes are put in, and any parts worn or damaged are replaced; therefore a rebuilt engine comes again into active work in as good and as effective a condition as when it was first constructed.



STANDARD EXPRESS ENGINE. FOUR WHEELS COUPLED.

The vast expansion in this department is only typical of what has taken place all round and in the great industrial centre of the locomotive works at Derby.

The Locomotive Superintendent is assisted in his position by the heads of four subsidiary branches, namely—

1. Assistant Locomotive Superintendent for the northern division.
2. Assistant Locomotive Superintendent for the southern division, including the running department of locomotives stationed at Derby.

But in addition to this general arrangement it is subject to a further subdivision into two classes—

- (a) The running which deals with engines actually at work.
- (b) The repairs, renewals, and constructing department; and the financial arrangements of each are kept perfectly separate and distinct.

These offices are filled: northern district by Mr. W. H. Adams, and for the southern district by Mr. C. H. Jones.

In the running department there are running shed foremen (night and day), and at large stations where engines are frequently changed there are also assistant locomotive foremen (one for nights and one for days), who are responsible for seeing that the engines are ready to take on their respective trains. There are also time-keepers, drivers, firemen, foremen of cleaners, steam risers, cleaners, coal stagers, and labourers.

In the maintenance branch work is only carried on by day, and the staff comprises foremen of fitting-shops, fitters, machinists, and labourers.

Each of the two assistant locomotive superintendents (north and south) has under his charge the conduct of the actual running and repairs to locomotives, which may be executed at outlying stations without necessitating the engines being sent to the large workshops at Derby.

They also have to report periodically as to the number of engines (both goods and passenger) which they consider are required by the exigencies of traffic at each point in their respective divisions; and subject to the Locomotive Superintendent's approval, the engines are provided accordingly.

The assistant locomotive superintendents have also to determine the number of engines to be stationed at each locomotive shed, the number of drivers and firemen necessary for their working; and they also arrange the order in which the trains are to be worked in each direction from each station, and the hours of the day and night that the drivers, firemen, fitters, cleaners, etc., are to be on duty.

The district locomotive superintendents, of whom there are thirty stationed at the large centres of traffic, are responsible for the efficiency of all engines working from their district, also for the efficiency of the drivers and firemen and all the men employed in their departments.

They are also responsible for seeing that an adequate supply of coal is constantly available for all engines, that the water-tanks are kept in order, that an ample supply of water is ready night and day, and for the working of water-cranes, especially during times of frost or drought.

At the end of each month the district locomotive superintendent has also to send in a return to headquarters at Derby to the assistant locomotive superintendent of his district, giving the number of engines stationed at his shed, the condition in which they are, the number of miles run during the month by each engine, the total coal consumed, oil, waste, and water used, the wages of the men employed in working each engine, and as to whether the engine is in good condition or requires or is being repaired.

On the other side he has also to state what engines have been in the repair shops during the month, the nature of the repairs, the cost both as regards materials and labour; further, the state of the machinery, stationary boilers, engines, and their maintenance in a thoroughly sound and effective condition. It is by these carefully prepared reports at each centre that the Locomotive Superintendent is able at each half-year to formally certify to the directors that the whole of the engines, tenders, machinery, tools, etc., of the Company have been kept in a good working order and repair during the period in question.

These district locomotive superintendents each week have to compile a list showing the duties of each driver and fireman, and what engine they are working and the trains which they are carrying every day during the week—of course, the whole twenty-four hours being covered.



STANDARD PASSENGER TANK ENGINE.

This sheet of duties is arranged on a system of a given number of men working in a ring upon certain classes of traffic—goods or passenger—and on certain trains. Thus a driver and fireman work a train later each day in a given direction, and the same on the return journey. The result is that, say, where eight men form the ring, in the course of eight weeks each man has covered the round and resumes again at the point from which he started. By this and similar means each driver will have worked exactly the same number of trains, will have conveyed practically the same loads, and a comparison can be made both as to the working of engines and men, and the total expenditure for the period ascertained and compared. A quarterly sheet is also prepared, showing the working of each man and engine. The Company give premiums to the drivers and firemen who have during the quarter performed the best locomotive work, and the men receive rewards accordingly for efficiency in working. Further comparisons are

taken by comparing the work and the cost of one district with another, and this is shown by a return compiled by each district locomotive superintendent, showing the total results in their respective limits. There is also a casualty list, in which all failures or break-downs of engines are recorded, and the causes; and it is needless to say that each district locomotive superintendent is very anxious that none of his engines should figure in this black book.

Each district locomotive superintendent is also responsible for clearing the line in case of accident or break-down. Each district is mapped out, so that when any obstruction occurs, the stationmasters, signalmen, or guards are able at once to telegraph to the proper district superintendent for assistance. Whilst every possible effort is made and every precaution taken to avoid accidents or break-downs, it is of the highest importance, when these unfortunate occurrences do take place, to have the speediest means of restoring the traffic to its natural condition. With this object each district locomotive superintendent is provided with a special break-down train, which is reserved solely for this purpose and which is specially constructed and fitted up with every necessary appliance and a powerful crane capable of lifting many tons of dead weight. Being required for sudden and unexpected emergencies, this train and all its appliances is constantly kept in perfect order, so as to be available at all times at a moment's notice. A break-down train consists of five vehicles and an engine—two brake vans and two wagons, and a crane in the middle mounted on a special wagon. The break-down train is, in fact, a travelling workshop, in which there are ample stores of chains, blocks, hydraulic and other jacks, and tools of every kind always stored and kept in their proper places, and a staff of men, most carefully selected and specially adapted for the work and familiar with all the appliances, is constantly available. An exact record is kept of the time when a call is given and when the break-down train leaves the locomotive sidings. The break-down train runs with "express lights," and the line is cleared for it so as to give it a speedy passage to the point blocked. A special register is kept of the names of the men required and their places of residence, so that they can be called on at any moment night or day. For ordinary purposes the staff consists of fourteen or sixteen fully trained men under a competent official, and in all important cases the district superintendent is in command on the spot. Provision is also made in the break-down train for the workmen for the use of a van as a canteen, where tea and other necessities are provided, to enable the men to continue at work on the spot for as many hours as may be necessary. A stretcher and a small ambulance outfit is also carried for use in case of emergencies

Fortunately, break-down gangs are not so frequently called into action as formerly, thanks to a wise periodical examination of rolling stock, heavier and better permanent way, the block system, and generally the stricter discipline and supervision of the staff as previously described. All these have produced greater efficiency, as well as greater safety; but notwithstanding this, the break-down train and its staff is as valuable and as important as it ever was, and it is maintained in the highest state of efficiency.

The third subsidiary branch of the Locomotive Department is the great works which the Company have established at Derby. This department is under the Works Manager (Mr. John Lane), who is responsible for the whole of the machinery, workmanship, and general administration. As the whole of the 3,000 engines in use have to go to Derby works for all extensive repairs and rebuilding, while a large number of entirely new engines are turned out to replace old engines broken up and to increase the total number of locomotives, the Works Manager has many important duties to discharge. He has to examine and report as to whether engines which have been a long time in use are worthy of extensive repair or rebuilding, or whether it is more desirable to send them to the scrap heap, and replace them by engines of more modern design. He also has to arrange for the construction of special machines, and tools, and labour-saving appliances for the production of special parts of the locomotives, so that they may be repaired or rebuilt and returned to active work as speedily as possible. An engine in a workshop is a useless appliance, is costing much and earning nothing, and hence the importance of having as few engines in the repair shops at one time as possible. These works are of an elaborate and very extensive character, and they are described in a special chapter.

The fourth subsidiary branch is the gas department, and the gas engineer is responsible for the mains, supply, and use of gas-lighting and all connected with it, and its periodical inspection and maintenance all over the Company's system.

LOCOMOTIVE SUPERINTENDENTS OF THE MIDLAND RAILWAY

Matthew Kirtley, appointed 1844, died May 24th, 1873.

Samuel Waite Johnson, appointed July, 1873.

As everything connected with the movement of traffic depends upon the efficiency of the Locomotive Department, it will be seen how important is the question of its development and its administrative control. From 1844 to 1901 only two officials have held this office which plays so great a part in railway undertakings.

MR. MATTHEW KIRTLEY was born at Tanfield, in the county of Durham, February 6th, 1813. His father was employed on the Stockton and Darlington Railway, and the whole of the family were associated with railway and locomotive work. Kirtley's brother was Locomotive Superintendent of the North Midland Railway; then another member of the family was one of the firm of Kirtley and Co., engineers, at Warrington, and his nephew, William Kirtley, was, until a recent period, Locomotive Superintendent of the London, Chatham, and Dover Railway. The first thing that we knew of Matthew Kirtley was as a youth of sixteen when he went as fireman on the Warrington and Newton Railway. From that he went to the Hull and Selby Railway, where he was a driver for some time; and afterwards, on the opening of the London and Birmingham Railway, he appears to have driven the first of that Company's trains to London in 1837. His next step was one of great importance, and marked a very distinct advance in his career, and occurred at the opening of the Birmingham and Derby Railway, when he received the appointment to take charge of the Company's engines at Hampton. His administration there was a great success, for ultimately, when the Midland Company was formed in 1844, he received the appointment of Locomotive Superintendent, although at the time he was engaged on the smallest of the three companies amalgamated. He was also given the sole control of the Locomotive, Carriage, and Wagon Departments, which post he held to the time of his death, when the offices were divided with one chief Locomotive Superintendent, and another independent chief official for the Carriage and Wagon Department. When Kirtley first started on the Midland Railway there were but ninety-five engines under his control, and these coming from three companies and all built by various makers and of different designs, they formed a collection of a most miscellaneous character. None of the three companies—the Birmingham and Derby, the Midland Counties, and the North Midland—then built their engines, and it was on the recommendation of Kirtley, in 1851, that the Midland began to build their own locomotives. The change came about in this way: Kirtley, as a thoroughly practical man, found that none of the parts of the various types of engines were interchangeable, and the result was that when an engine broke the smallest portion of a working part the locomotive had to remain entirely out of work till a duplicate part could be either made in the repair shops or one supplied by the makers of the engine. Indeed, it became necessary in some cases to send the engines back to the makers to be repaired, and all this meant loss, delay, and expense to the

Company. To obviate this difficulty Kirtley advised the directors to erect their own engines in their own workshops as well as having them repaired there; and where this could not be done the makers of the engines were supplied with Midland drawings and designs, from which they had to manufacture the engines.

The first locomotive turned out at the Derby works was "No. 158," in September, 1851, and some of these standard engines are now running, having in the meantime been rebuilt according to the old designs on the original frames.

In 1861 he had to design and construct some entirely new and powerful tank engines for working the traffic up the heavy Lickey incline of 1 in 37 on the Birmingham and Gloucester section of the



GOODS ENGINE, MR. KIRTLEY'S DESIGN. BUILT 1860.

Midland. At the Great Exhibition of 1862 six new express engines were designed and constructed specially to convey the very heavy traffic up to London, and one of Kirtley's goods engines, "No. 479," was shown in the Exhibition.

In 1870 he placed forty-eight still larger express engines, known as the "800" class, on the Midland, which did excellent work for many years, and after being rebuilt are still in effective working to-day. These engines, together with a type known as the "890," are of great historic interest. When the great policy of third class by all trains was first introduced, the length of the Midland express trains was, of course, greatly increased. Previously express trains had consisted of five or six coaches, but directly afterwards they were increased to thirteen and even more vehicles. To run this greatly augmented weight up heavy gradients at a high speed called for a

great expansion of locomotive power; and when the time arrived in 1872 for this policy to be inaugurated Kirtley had sixty-eight new and powerful locomotives ready for the work, which they performed with great ease and satisfaction.

Matthew Kirtley was a man who made a great mark in locomotive engineering in the early period of its history. Of course, he was one of the "old school" of strictly practical working engineers who had thoroughly mastered all the details by actual personal experience in the management and running of engines. At that time, when engines were much more liable to break down on the road and when so many repairs had to be executed on the spot in order to enable an engine to bring its train to its destination, the driver had to be much more of a fitter and operative mechanic than a driver is called upon with more perfect appliances to be to-day. At that time a driver had what was known as a "shed day" once a week, when he had to put in the whole day, together with the fireman, repairing, packing glands of the piston rods and valve spindles, making tight joints, and generally overhauling his own engine.

This experience was very valuable to Kirtley, and he had also had the great advantage of his merits being recognised by the Stephensons. It was while Kirtley was working on the London and Birmingham Railway that the Stephensons recommended him to the Birmingham and Derby Junction Railway; and it was afterwards, through their favourable opinion of Kirtley, even although he came from the smallest of the three companies amalgamated, that he was given this highly important position on the Midland.

At that period there were considerable differences among engineers as to whether engines should be placed upon four or six wheels. The Midland Counties Company, following the lead of the London and Birmingham, had adopted four-wheeled engines. Mr. Kirtley, having had actual experience of the unsteadiness of these four-wheeled engines, was, on the other hand, a strong advocate for the six-wheeled type; and immediately after he assumed control of the Midland he introduced six-wheeled engines exclusively, and placed the four-wheelers to unimportant work as speedily as possible. This change proved of great utility, and added largely to the safety of railway travelling.

Kirtley's life presents a fascinating picture of sturdy work somewhat similar to that of George Stephenson in the development and carrying out of his ideas. It was, of course, of great advantage to him that his own practical experience enabled him to know exactly what engines did and could do, and assisted him largely in his manage-

ment and dealing with the men under his control, and also in designing engines for specific work.

Here we have a man beginning life in the humblest position with a clear head, gifted with great natural mechanical intelligence, mastering detail after detail, and giving practical instructions to his assistants as to the drawing of the designs which he intended to be reproduced. It would be idle to pretend that Kirtley was a man of great book-learning, or of polished education, or of high scholarly attainments; on the contrary, he was essentially a plain, sturdy specimen of a Durham man, whose mind was imbued with the all-important fact that everything came down to the test of practical working, and that the practical outcome of a thing was the true gauge of its value. And it was the possession of these great natural gifts and qualifications that for so many years made him the valued and esteemed servant of the Midland Railway Company until the day of his death. Mr. E. S. Ellis, who was Chairman of the Company at the time of his decease, and whose admiration and veneration for the Stephensons was of the highest possible character, his association with them in his young days exercising an abiding influence with him all his life, extended that admiration in no slight degree to Matthew Kirtley. Kirtley, in the early stages of his career and afterwards, was sometimes, for a variety of reasons, fiercely attacked by those who had not, as he had, gone through the initial stages of great railway expansion and development in England. He was even accused of being "tailor bred" in the railway press and the pamphlets of the period. How small, paltry, and feeble-minded these attacks read to-day! But the fact that Kirtley was so attacked only increases our respect for the man and our admiration for the responsible directors who had the courage as well as the sound business instinct to support and uphold one who, although not cultured, was a great practical mechanical engineer, whose name and whose fame deserve to live in locomotive history.

In his memory a handsome granite obelisk has been erected in the Corporation Cemetery at Derby, which bears the following inscription:—

MATTHEW KIRTLEY,

BORN FEB. 6TH, 1813.

DIED MAY 24TH, 1873.

Locomotive Superintendent of the Midland Railway Company
from 1844 up to the time of his death.

This monument was erected by the Employees of the
Locomotive and Carriage Departments as a
token of their affection.

"The way of the just is uprightness."

ISAIAH xxvi. 7.

MR. SAMUEL WAITE JOHNSON, M.I.C.E., who was President of the Institution of Mechanical Engineers in 1898, is a native of Bramley, near Leeds, and was educated at the Leeds Grammar School. He entered on his career as an engineer at the important works at Leeds of Messrs. E. B. Wilson and Co., of the railway foundry, where he was a pupil under the late Mr. James Fenton, an engineer of some note and importance, who, in the early days of railways, constructed some locomotive engines that were famous in their day. At these works general engineering work was carried on as well as the construction of stationary and locomotive engines. He showed a decided



MR. S. W. JOHNSON.

favour for the locomotive department, and accordingly his first step in the ladder of progress was his appointment as manager of workshops for the repair of engines on the Great Northern Railway, whose works were then under the control of Mr. Archibald Sturrock. From thence he removed to Gorton, near Manchester, when he entered the service of the Manchester, Sheffield, and Lincolnshire Railway Company (now Great Central) as Works Manager of the locomotive, carriage, and wagon shops, then under the superintendence of the late Mr. Charles Sacré. This position he occupied for five years, and he resigned to take up the still higher office as

Locomotive, Carriage, and Wagon Superintendent of the Edinburgh and Glasgow Railway at the Glasgow headquarters of the Company. During his tenure of that office this line was absorbed by the North British Railway Company, who retained his services as Locomotive Superintendent of the Western (or Glasgow and Edinburgh) Division of the North British system. After spending about two years in Scotland, Mr. Johnson, in 1866, took a still more important step when he accepted the position of Locomotive, Carriage, and Wagon Superintendent of the Great Eastern Railway at Stratford. He occupied this post for seven years, and during that period he initiated some important mechanical changes both in the

design of locomotives and in the construction of machinery, as well as great improvements in administration. After the death of Mr. Matthew Kirtley in 1873, the Midland directors were extremely fortunate in securing Mr. Johnson as his successor. This position also carries with it the offices of Locomotive Engineer to the Somerset and Dorset Joint as well as the Midland and Great Northern Joint Railways.

It will thus be seen that for over thirty-five years Mr. Johnson has had a most varied and wide experience in the designing and construction of locomotive engines as well as a great practical acquaintance with the construction and management of all kinds of rolling stock.

Indeed, he may be said to be the doyen of locomotive superintendents in this country, and his experience is of the most varied and extensive character, which places his scientific knowledge of this department of railway working in the highest eminence. Some of the leading features of the great work which he has accomplished for the Midland are dealt with in the chapter relating to the locomotive works at Derby. Some idea of the progress and development of the locomotive requirements of the Midland Company during his administration may be gathered from the fact that when he was appointed in 1873 the train mileage of the Company for the year was 19,811,000 train miles, whereas the mileage calculated for 1900 was no less than 48,400,000 train miles, which is very nearly one million miles run by the Company's engines every week.

WAY AND WORKS

The Way and Works Department, the fourth great division (of which Mr. J. Allen McDonald is Engineer-in-Chief) has the care and maintenance of the whole of the way and works of the Company, which include, as the name implies, the permanent way, rails, sleepers, banks, viaducts, culverts, bridges, aqueducts, telegraph posts, signal-boxes, canals, stations, goods sheds, engine sheds—in fact, it covers all the real property of the Company with the exception of the rolling stock. There are three branches, all of which are under the Way and Works Committee, consisting of four directors, and the Engineer-in-Chief takes the control of everything except the subsidiary branches, which are under the Estate Agent and the Electrical Engineer.

The Engineer-in-Chief has associated with him an assistant engineer for new works, who deals entirely with the new works which the Company is constructing; and an assistant engineer, who is charged with the maintenance and efficiency of the works already completed. This latter department is subdivided, and is controlled by three

divisional engineers, one for the Northern Division (north of Derby), another for the Southern Division, and the third for the South Wales line. Further, there are district engineers, who are stationed at the most convenient centres, eleven in number. Under these district superintendents there are forty-three inspectors, whose duty it is to walk constantly over the lengths of line committed to their charge and carefully examine the condition of the road, culverts, bridges, and everything on their section. They mark places requiring repair, enter them up in a book, and give instructions to the gangers of plate-layers or to the department or workmen concerned, and see that the necessary repairs or alterations required are at once attended to. In order to ensure, as far as possible, the absolute safety and efficiency of the line, the whole of the rules relating to the supervision and maintenance of the permanent way have to be read over to every man on entering the department, and also twice a year to each man



EXPRESS ENGINE. BUILT 1881.

employed; and the district inspector is responsible for seeing that this is done. There are seventy-seven of these rules and sub-rules, so that it will be seen that at least twice a year the district inspector has almost to hold a school of instruction. This duty is necessarily very strictly enforced, and the utmost stress is laid on the rule that the great and paramount duty of all is to see that the lines are kept absolutely safe for running. When this duty of reading the rules has been performed, each man to whom the rules and regulations have been so read and explained must sign a declaration that this has been done, which declaration is forwarded to the permanent way inspector for the district. In addition, the permanent way and works inspectors have to take care that the whole of these rules and regulations are duly observed, and any departure therefrom must be promptly reported to the Engineer-in-Chief.

Each inspector must have a register of the names and places of residence of all the men employed in his district, so that in case

of accident he may be able to summon them in the event of their services being required either by day or night, to remove any obstruction caused by snow, frost, slips, or other sudden emergency.

The men who keep the line in order are divided in gangs for ordinary purposes of six or eight men, who are under the charge of a foreman or ganger, to whom is allotted a length of line, say, from half a mile to five miles, according to the number of lines and the amount of traffic on it, and all their attention has to be devoted to it, the ganger being personally responsible for the whole.

Each foreman, ganger, or leading man must walk over his length of line every morning and evening on weekdays, and where passenger



ILKLEY BRIDGE.

trains are run, once on Sundays ; and he must examine the line, level, and gauge of the road, and see that everything is sound and in proper order and repair.

He has in addition to examine gates at crossings, and report any irregularities which he observes, in order that the persons who are required to keep such gates closed and fastened may be charged with the penalties. In case of floods the foreman or ganger has to examine carefully the action of the water through the culverts and bridges, and in case of any sign of danger he must stop the trains and take all precautionary measures till the inspector arrives, and thus secure the stability of the line and the safety of the traffic.

The ganger is also responsible for the extinction of fires near the

line, and in the event of snow or fog he has to see that work ceases in the Permanent Way Department, so that the services of the men may be transferred to the Traffic Department as fog signalmen or as clearers of snow, so that the traffic may proceed smoothly and safely as far as possible without interruption.



CLIFTON SUSPENSION BRIDGE, BRISTOL. BY MR. W. H. BARLOW.

CHIEF ENGINEERS OF THE MIDLAND COMPANY

W. H. Barlow . . .	July, 1844, to 1857 . . .	
J. S. Crossley . . .	January, 1858, to 1875 . . .	
A. Johnston . . .	April, 1875, to 1883. . .	Lines open for traffic.
J. Underwood . . .	April, 1875, to 1889. . .	Lines under construction.
A. A. Langley . . .	October, 1883, to 1890 . . .	
J. A. McDonald . . .	July, 1890 . . .	

In the early days of railways the lines were designed and constructed by independent engineers who were not officials of any particular company, but who were called in for the performance of special work, and to carry out specific schemes for the extension of old lines or the inauguration of entirely new works. The railways and the railway companies of the kingdom had not yet become sufficiently large and important to be able to retain exclusively the services of an eminent engineer for their own special benefit; and it was only after the companies had by great combinations and amalgamations grown to

gigantic proportions that they were able to command, and indeed were compelled by the necessities of the case to have, their own engineer, whose services should be entirely and exclusively devoted to the interests of one company. This system of calling in special engineers was followed for a very considerable period, and applied to all the railways of the kingdom; and one of the chief duties of these engineers was to prepare plans for the Acts of Parliament, and to give professional evidence of their practicability and utility before Parliamentary Committees. A very good example of this is to be found in the two Stephenson's, George and Robert (father and son), who at the time they held the position of chief engineers to the lines which subsequently formed the Midland system, also held a similar position on many other lines all over the country. That necessitated each company having a resident engineer of its own to act under the advice of the Stephenson's (practically for the whole of the narrow-gauge railways, of which they were the champions), Brunel (for the broad gauge), and a few others.

During this period Robert Stephenson and Co. were also locomotive engineers at Newcastle-on-Tyne, where they designed and built engines for use on the various railways; and as a matter of fact this firm have supplied locomotives to the Midland from the earliest lines which formed the foundation of the Company, including the "Comet," which opened the Leicester and Swannington line in 1832, down to the present day. Both George and Robert Stephenson were also owners of the Snibstone Collieries, near Leicester; the Clay Cross Collieries, Derbyshire; and the lime pits at Crich, near Ambergate.

The resident engineers who had been gradually acquiring practical knowledge and experience in carrying out works under such master minds, on the death of the Stephenson's received the appointments as chief engineers; but a new order of things came into operation, and these chief engineers no longer had a purely nominal connection—henceforward they were the responsible officers of the company to whose interests the whole of their energies had to be devoted. There was in fact no longer that exclusive prominence that belonged to the great railway pioneers; but their pupils and assistants raised up a new generation of engineers to follow them, and each company was then able to command the exclusive services of its own practical and highly trained official.

ROBERT STEPHENSON having been the engineer-in-chief of the North Midland, occupied a similar position for the united Company in 1844, and his distinguished father, George Stephenson, who had been the engineer for the making of the North Midland, became "consulting"

engineer for the Midland, which office he held up to his death. Robert Stephenson, who was engineer for the Leicester and Swannington in 1830, was engineer for the London and Birmingham line, which gave the Midland its first communication with London (over what is now the London and North Western Railway *viâ* Rugby), while his father, George Stephenson, was engineer for the North Midland; Birmingham, and Derby; Leeds and Bradford; Leicester and Burton; Syston to Peterborough; and between them they were practically engineers for the whole of England rather than for any particular company. In fact, at the time Robert was engineer to the Midland he was making the Chester and Holyhead Railway, including the celebrated tubular bridge.

Robert Stephenson died October 12th, 1859, in his fifty-sixth year, and he was buried in Westminster Abbey.

MR. WILLIAM HENRY BARLOW, the first Chief Engineer of the Midland, is the oldest official of the Midland Company still living; and he is still one of the consulting engineers of the Company. He was the Resident Engineer of the Midland Counties Railway at Leicester, and at the time of the amalgamation he was selected and removed to Derby as Chief Engineer of the united Company. For many years he acted under Robert Stephenson, who was Consulting Engineer. Mr. Barlow constructed many lines, including the Bedford and London, for the Midland; but the great work with which his name will ever be associated is the St. Pancras roof, which he designed, as well as all the arrangements and offices connected with the station, except the hotel and offices, which were the work of the late Sir Gilbert Scott. He was joint engineer with Sir John Hawkshaw for the Clifton Suspension Bridge (1861); he was one of those appointed to investigate the cause of the fall of the old Tay Bridge (1879); constructed the new Tay Bridge (1880-7); was President of the Institution of Civil Engineers (1880); consulted as to the feasibility of the Forth Bridge (1881); and is the author of several books on technical subjects. He was born on May 10th, 1812, and is the son of the late Professor Peter Barlow, F.R.S., who was one of the three commissioners appointed in 1845 to report on the question of railway gauge. He was educated by his father, and in the Engineering Department of the Royal Arsenal, Woolwich. In 1832 he went to Constantinople and erected works and machinery for Turkish ordnance. He was appointed Resident Engineer to the Midland Counties Railway in 1842; Chief Engineer to the Midland in 1844; and Consulting Engineer to the Midland in 1857.

MR. JOHN ALLEN McDONALD, the Chief Engineer of the Midland, is a member of the Council of the Institution of Civil Engineers. He

is a son of the late Mr. George McDonald, surgeon, of Bristol, where he was born in 1847. After the completion of his educational course at Clifton, he commenced his engineering career on extensions of the London and South Western Railway, being trained as a pupil of his brother, Mr. A. H. McDonald, who was then Resident Engineer for Mr. W. R. Galbraith, the Chief Engineer for these lines. He was next engaged as an assistant to the late Mr. Charles Richardson, the engineer and originator of the Severn Tunnel; and afterwards he did some work in the construction of the London and North Western and Rhymney Companies' joint line in South Wales. At the end of 1871 he entered the service of the Midland, when he was engaged by the late Mr. J. S. Crossley, the Chief Engineer of the Midland; and in 1872 he entered on the great extension work, which has, on one part of the system or other, been continuously in progress on the Midland Railway since that period. Mr. McDonald was appointed Resident Engineer on the widening of the main line from Trent to Leicester. He continued his valuable work as Resident Engineer on different new lines and works till 1889, when he was transferred to Derby as Chief Assistant for new works under Mr. A. A. Langley, the Chief Engineer.



MR. McDONALD, THE ENGINEER-IN-CHIEF.

Shortly afterwards the maintenance of the Southern Division of the Midland lines was added to his other duties, and in July, 1890, on the retirement of Mr. Langley, he was appointed Engineer-in-Chief. Since that period he has been responsible for many great works, including the provision of four roads from Kettering to London, with very heavy tunnelling at Amptill and Elstree; and also for the vast alterations which have been effected at Kentish Town, which have proved of enormous advantage in the working of the traffic. The construction of the new direct line from Sheffield to Bradford, the extensive new works at Sheffield, the Leicester and Wigston widening, the new widening from Trent to Chesterfield, now approaching completion, are all included among his achievements.

The Architect (Mr. C. Trubshaw) has to design station buildings and to perform all the duties which come within his department.

The Superintendent of the Signal Department (Mr. T. Woodward) has about twenty district inspectors under him, and at the large centres where there is much traffic the duties of all concerned are not only very onerous, but they are of vital importance and require constant and most earnest supervision, because the safety of the line so largely depends upon the efficiency in signalling. This department has made very rapid progress in recent years, both as regards its importance and its complicated machinery. When railways were first introduced there were no telegraphic signals, but with the growth of traffic the use of signals has been enormously extended until practically every movement of traffic on the main line, no matter how simple it may be, is controlled and regulated by the movement of a signal arm or disc on a fixed post. These signals in all cases work in conjunction and are interlocking with the points, so that they must act in perfect unison. It is a remarkable fact that, notwithstanding the number of signals and the complication of signal-boxes, scarcely any accidents are caused by errors in signalling, and it may be said there are none due to signals being out of order. The signals are so constructed that if they do fail or get out of order through any cause they automatically fly to "danger" and stop all traffic, so that the safety of the travelling public is absolutely assured. In olden days one post with a pair of arms controlled both lines; now the smallest station has three signals all on separate posts for each direction; and at many places where there were formerly only three signals there are now at least ten or twelve signal-posts.

In fact, every mechanical device has been brought into use to minimise risk and to eliminate as far as possible the element of human frailty.

SIGNALS AND SIGNAL WORKS

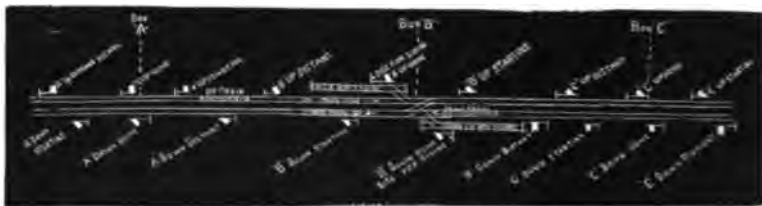
The signal works are situated at the North End at Derby. They deal with the construction of signal-boxes, signals, and the interlocking apparatus and fittings. There are ever 1,800 signal-boxes in operation, and their size and importance vary largely. On single lines there are small cabins which contain simply one point lever, and on the other hand some of the great signal-boxes at important junctions or stations have as many as 240 levers to be manipulated. These signal-boxes contain most elaborate and intricate mechanical appliances, which are maintained in the most perfect order. The interlocking of the various levers to ensure harmonious action so that no conflicting signal can be

exhibited to a driver is of the most complex character ; and of course the greater the number of levers involves a corresponding increase in the number of inter-locks. For example, to show the great practical value of interlocking points and signals, take the simple case of say two main lines (up and down) which are joined by a double-line branch. Eliminating the distant signals, there would be four "home" signals placed to "open" or "close" each of the four lines for traffic. There would thus be four levers to move any of these four signals—one for each signal—and also two levers to move the two pairs of points—one lever for each pair. These four signals could be shown in the old days before interlocking by means of error on the part of the signalman in no less than sixteen different combinations ; and of these only ten are safe working signals, and six would lead to serious accidents. While as regards the two pairs of points they can be placed in four positions—irrespective of how the signals stand—only three of which are safe and one highly dangerous. Thus with sixteen different positions of signals and four different positions of points there are no less than sixty-four possible combinations of points and signals. But of these sixty-four combinations only thirteen are safe, and fifty-one are absolutely dangerous. The function of the interlocking apparatus is to make these fifty-one dangerous combinations impossible, and thereby avoid the possibility of an accident due to human fallibility in the manipulating of point and signal levers.

Electrical apparatus is also brought largely into use in signal-boxes. Above the interlocking frame, but in no way connected with it, a shelf is fixed, upon which the block telegraph instruments and electric bells stand. The most simple box situated on a double line of railway has two electric bells and four block telegraph instruments. One bell and two instruments communicate with the next signal-box (say) north ; another bell and two instruments communicating with the next signal-box, which we will call south. Each box is practically the end of one section and the beginning of another ; and the instruments constitute a continuous record of the state of the line on the respective sections north or south, to which they refer. The outdoor signals are raised or lowered by the signalman in exact accordance with the position indicated by the needle of the block telegraph instrument. This simple arrangement becomes immensely increased and more complicated with every additional junction, as each pair of lines requires its own bell and two block instruments ; and where there are four lines of rails forming a junction with four other lines the number of instruments and bells is, of course, doubled.

All the important lines in the kingdom are worked upon the "abso-

lute" block system, and the object thereof is to maintain and secure an actual interval of space or distance between all trains, in place of an uncertain interval of time ; consequently, although it is quite out of the question to alter the name now, still "space system" would have been much more appropriate, more especially as in these days we know that

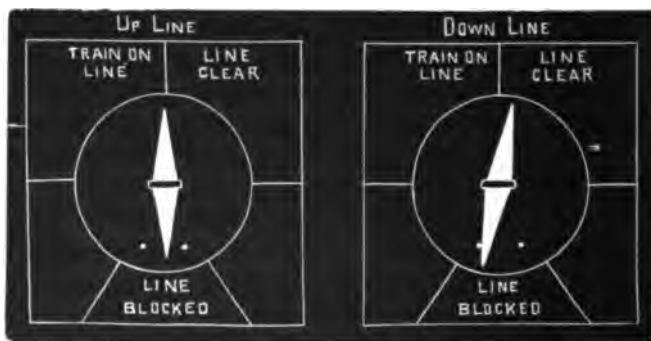


BLOCK SIGNAL DIAGRAM.

the system is *not a block to the traffic*, but that it permits an enormous number of trains to be safely passed over a railway.

In order that the practical working of the "absolute" block system may be clearly understood the annexed illustration is given.

The line of railway is divided into lengths or sections by the erection of signal-boxes at convenient distances ; the greater the traffic, naturally, the greater must be the number of sections.



BLOCK SIGNAL INSTRUMENTS.

The permission or otherwise for a train to approach, as indicated upon the block instruments, is, of course, communicated to the engine-drivers by means of the usual distant, home, and starting signals.

The diagram shows an up train as having left the starting signal at "A," and approaching the distant from "B," with signals off. Also a down train is shown as passing the home signal "B," with all signals off to "A."

When a train passes the first signal-box the line is considered "blocked," and if a second train arrives before the first has arrived at the next signal-box it is stopped and detained at the *starting signal*, until the telegraphic signals have been duly received, showing that the first train has arrived, and that the section is "clear"; it therefore follows that no two trains are ever permitted to be in the same "section," and that collisions should be impossible.

On a line such as the Midland, where the traffic is very varied in character, an elaborate and complicated code of block signals is necessary to indicate what class of train is approaching.

In addition to this signal light indicators are introduced in all boxes where there are signals which cannot be seen by the signalman owing to obstructions; while there are several ordinary single needle telegraph instruments and one or more telephones in nearly all boxes, and there are special electric bells for long distances or for communicating with adjacent stations. The ordinary telegraph instruments are for service messages in connection with the working and running of trains, and at specified stations for postal telegraph work.

This department have not only to construct all the signal and other apparatus, but they have also to consider in conjunction with representatives of the Locomotive and Traffic Departments the best positions for signal posts, in order to give the best sight to the drivers of trains. Where there are curves and buildings and numerous other signals this is a matter which requires very grave consideration, for upon the clearness and absolute correctness of signalling very much depends. When these officials have decided what signals are necessary at any junction or siding a plan is prepared and the necessary posts, counter weights, rods, and levers are obtained from the stores, where large supplies are always available. Gales of wind frequently necessitate very rapid repairs, and every provision is made for this purpose. In addition to the complicated work inside a signal-box, there has also to be provided long lengths of rods to work the points, which have to be placed in some cases at considerable distances from the signal-box. A signal post varies in height from fifteen to sixty feet.

When an old signal-box has to be replaced by a new one, the new one is built and conveyed in sections to the desired site; and the old arrangements are not disturbed till everything is completely ready for a quick change. This work is usually performed at a fixed hour on Sundays, when the traffic is light; and information as to the day and hour of the change is published beforehand to all concerned.

The Midland line is in the very first rank as regards its signal arrangements, and the whole is being constantly watched, inspected,

and tested, every signalman when he comes on duty and when he leaves off having to satisfy himself that everything is in perfect working order. Rule 58 reads: "The signalman must frequently examine and try his fixed signals to see that they work well, are kept clean, and stand properly. Great care must be used in putting on a signal; it is not sufficient merely to move the lever, but the signalman must at the same time watch the signal so as to ascertain that it obeys the lever and goes fully to danger. When a fixed signal is out of the signalman's sight, and its working is indicated by a repeater in the signal-box, he must satisfy himself by observation of the repeater that the fixed signal is working properly. He must take care that the signal wires are kept properly adjusted by means of the regulating screws or links so as to compensate for the expansion and contraction caused by variations of temperature."

In olden times the signals were "off" in their normal condition—that is, the arms were straight down within the posts out of the sight of the line, and the light shown at night was white. Thus the "All right" signal was practically the absence of anything to the contrary; in fact, it was purely negative. After a train had passed a signal cabin the arm was put in a horizontal position, with a red light for danger at night, and the signals were maintained in that position for five minutes. At the end of that time the signal arm was lowered to an angle of forty-five degrees and a green light shown, intimating to the driver of a succeeding train that he could proceed cautiously, as there might be another train a few minutes in front of him. At the expiration of ten minutes the arm was again lowered to a vertical position, and a white light or "Line clear" exhibited.

The Midland Company tried a very ingenious appliance in 1863, which consisted of a clock which mechanically showed the time at which the previous train had passed up to a quarter of an hour, and the driver of a following train knew exactly how long it was since the train in front of him had passed. Two of these mechanically regulated clocks were fixed—one at Kegworth and the other at Kibworth. They were started by the passing train depressing a lever attached to the rails and communicating with the clockwork, and at the expiration of fifteen minutes the indicator returned to zero. They worked remarkably well for a time, but, like some other complicated mechanical arrangements, they were not to be relied upon. Besides, the information conveyed was of little value, as a train might have broken down as soon as it had passed out of sight; and this actually did happen.

The absolute block system has altered all this, and the traffic has

now to be worked by absolute positive knowledge, and there is now no such thing as "Caution"; it is either "Go" or "Stop."

The "Stop" signal is as before the horizontal arm and a red light; while a green light and the arm at an angle of forty-five degrees is the "All right" signal. A white light now means that the signal is out of order, and has to be treated as "Danger" accordingly, as a white light can only mean that the red or green glass has been broken, or fallen out of place. The green light is also less liable to be mistaken for ordinary lights adjoining the line.

There are 84,317 electric batteries in use in the Midland system, 19,500 telegraph instruments, and about 30,000 miles of telegraph wire. There are 1,800 signal cabins, with 24,500 levers in use, while there are 14,500 signals.

In the department of the Estate Agent (Mr. P. S. M'Callum), all the purchases of land are dealt with; and the delicacy and importance of these negotiations in many cases, and especially in large towns, is evident.

The Electrical Department (under Mr. W. Langdon) has the control of the electric lighting of stations, hotels, etc., the provision of telephones between all signal boxes, in hotels, at stations, and wherever required, and he is responsible for all the telegraphic instruments used in connection with the block system

of signalling. He has also the construction and maintenance of the electrical repeaters, the use of which is to show the signalmen whether the lights at distant signal-posts, it may be three-quarters of a mile away, are burning or are gone out. When the light is burning the apparatus shows "Light in"; when the lamp becomes extinguished an electric bell rings and the indicator shows "Light out." This is a very valuable adjunct for signalmen at night time, especially when the signalman in his cabin is unable, from curves, obstructions, or other causes, to have a view of the distant signal. The whole of the work of the department is of a delicate but most valuable character, and forms a very interesting link in the great combination of devices which the Midland have ever been foremost to adopt to give knowledge and security in running.



MR. W. LANGDON.

THE CARRIAGE AND WAGON DEPARTMENT

This department (under Mr. T. G. Clayton), being the fifth division, is under the Carriage and Wagon Committee, which consists of four directors. Since 1873, on the death of Mr. Kirtley, this has been an independent branch. The Superintendent has associated with him an assistant superintendent for indoor work and another assistant superintendent for outdoor work; there are also district assistant superintendents, who have the charge of the carriage shops at the local centres, foremen, workmen, carriage and wagon examiners, carriage washers, etc.



SIGNALS AT THE PRESENT TRAMWAY JUNCTION, GLOUCESTER.

This department has the construction, renewal, care, and maintenance of over 5,000 carriages, vans, horse-boxes, and vehicles running on passenger trains; in addition there are 119,000 wagons, cattle trucks, and brake vans for goods and mineral traffic; whilst there are also the very extensive carriage and wagon works at Derby, filled with very valuable machinery for the construction and repair of all rolling stock belonging to the Company.

The present carriage and wagon works at Derby have been entirely formed since Mr. Clayton took the position in 1873. These works and their special machinery are dealt with in a separate chapter.

Every carriage, wagon, or other vehicle travelling on the line is examined and tested in running on being sent out new, and all stock is also examined many times every day all over the system. Every train that runs, whether passenger, goods, or mineral, and whether it



LEICESTER NEW STATION, 1892. DESIGNED BY MR. C. TRUBSHAW.

consists of private wagons or of stock belonging to the Company, is examined before it starts on its journey or when it enters on the Midland system, and at fixed stopping-places *en route*. These stoppages—many of them for examination purposes—are very valuable in preventing accidents, as heated axle-boxes, disturbance of load, defects in the covering by sheets, damaged springs or other parts are at once detected, and the necessary repair is effected on the spot; or if it is anything of a character likely to become more serious the



INTERIOR, LEICESTER NEW STATION, 1892.

vehicle is shunted out of the train till it can be put once more into running condition.

MR. T. G. CLAYTON, Superintendent of the Carriage Department, is the son of an engineer and boiler maker, and was born at Madeley, Shropshire, early in 1831. He began his railway career under remarkable circumstances in 1850, when, after having the run of his father's pattern shops, foundry, etc., he elected to expand his ideas and enlarge his experience by entering the Locomotive Department of the Shrewsbury and Birmingham line. The condition of that line at this period may be understood by the statement of one fact, namely, that the Company were conveying passengers from Wellington to Shrewsbury, a distance of eleven miles, for one penny. Of course, such a state of affairs could

not pay, and was only rendered possible by the support of the Great Western, who "held up" the Shrewsbury line till the Great Western could get through from Oxford to Birmingham and Wolverhampton. These were very lively times, and the officials had often to seek the protection of the police, and even the "red-coats," for there were constant troubles and outbreaks of one kind and another. Having spent several years on this line, Mr. Clayton was in 1854 "absorbed" into the Great Western, who took over the smaller company, in whose service he remained altogether for about fifteen years. But this was not continuous, for at various periods he was engaged in important under-



MR. CLAYTON.

takings under Fox and Henderson, the Horseley Company (who built Paddington Station); he was also in the service of the Royal Mail Steam Company on two occasions at their marine engine works, and had service in thirteen engineers' shops in London. The building of lighthouses before they were sent out to their allotted sites also came within the scope of his engineering experiences, so that all sides and phases of engineering and construction came within his range, and proved invaluable to him in after years in determining how best to accomplish the objects desired. During the larger portion of the fifteen years covering his service with the Great Western Mr. Clayton

had charge of the Carriage and Wagon Department under Mr. Armstrong. When the Great Western, in 1863, absorbed a number of other railways at the time of their great scheme of amalgamation, that Company came into possession of all their various carriage and wagon works at Paddington, in South Wales, at Worcester, and at Shrewsbury; and it was then seen that new and greater works must be constructed so as to concentrate the whole. Oxford was at first selected as the site of these works, but while the concentration was in embryo the Oxford site was abandoned and the erection at Swindon determined upon. The designing and construction of these great works was accordingly entrusted to Mr. Clayton, and he carried this vast and important undertaking through with very great success. Soon

after the new workshops were started an immense amount of work was thrown upon the new department in the conversion and reconstruction of a large portion of the broad-gauge stock into narrow-gauge carriages, wagons, vans, etc. The great pressure thus suddenly thrown upon the resources of Swindon was successfully met, and an exceptionally heavy task was got through with great expedition, owing to the skill and resourcefulness in a very great degree of Mr. Clayton, which brought his name and his reputation into great prominence as one of the first men in this class of work in the country. During the time he had charge of the Swindon works he had the honour of designing and constructing the Great Western carriage for Her Majesty the Queen, which she uses whilst travelling on the Great Western system up to the present time, and which has given much satisfaction to Her Majesty. This carriage as originally designed by Mr. Clayton was 50 feet long, and was to be carried on the bogie principle. But afterwards Sir Daniel Gooch stepped in and cut off 7 feet, reducing the length to 43 feet. Sir Daniel Gooch also modified the bogie principle to some extent, as he considered that the bogie for carriages was too experimental to be embodied in a railway coach for the Sovereign. The carriage was constructed with independent frames, and when Mr. Clayton left the works at Swindon for Derby it was all but finished in every detail. Since that time, however, the vehicle has been lengthened to 50 feet, so as to give greater accommodation to the ladies-in-waiting, more space for the storage of provisions, and retiring rooms; but the original apartments were by desire of Her Majesty left intact. This carriage was constructed in 1873, and the same year Mr. Clayton transferred his services from the Great Western to the Midland, where he has remained ever since. He found the Midland stock in a very backward condition, and actually new carriages were being constructed from patterns which were twenty years old, with luggage rails on the tops—a thing which had been discarded on other lines. He at once inaugurated a great scheme of practical carriage reform, which the Board of Directors found attracted traffic to the line by giving a much greater degree of comfort to passengers. Previously the idea which seemed to prevail generally was that it was only desirable to provide what was more or less absolutely necessary for passengers, whereas to-day nothing is too good in the way of space, easy riding, and luxurious appointments. The old stock was replaced as rapidly as possible, and obsolete vehicles were discarded and broken up. Upholstered third-class carriages, more airy, wider, the frames faced with steel to give greater strength and rigidity, bogies to give smoother travel, lavatories, and in fact everything has been done to beautify the stock and to add to the enjoyment of travel; and in all this great transformation Mr. Clayton has played a leading and very important part.

THE STORES

This department is under the charge of Mr. G. Morrall, and forms the sixth administrative division. It is controlled by a committee of six directors, and this department deals with everything except land, which is purchased by the Company, from thousands of tons of coal, rails, girders, bricks, timber, and iron, down to a tin-tack or a box of matches. In purchasing such a vast amount of materials the most systematic arrangements are necessary to prevent waste and leakage and to know exactly what is in stock and what is required.



MR. MORRALL.

The general scheme adopted is for the Superintendent to ascertain what is necessary to be supplied, and to order accordingly from the producers who have contracted with the Company. On delivery it is booked up as in stock. Everything required all over the system in every department has to be ordered through the stores by a written requisition, and a receipt given on delivery. The Superintendent thus has a receipt for all that goes out of his department as well as for all that enters it, and consequently the difference between the two represents the stock on hand.

This is carried out in every detail, and it is only by a very strict adherence to this scheme that a proper check can be maintained over the vast quantities of materials used. Some conception of the extensive character of the transactions of this department may be obtained from the fact that on January 1st, 1900, the general stores had a stock of materials on hand of the value of £1,425,772 19s. 3d.

Again, in his department the materials required for the maintenance of existing rolling stock, buildings, lines, etc., and materials required for the execution of new works are kept entirely separate and distinct. One of the largest items the stores has to deal with is the coal for the locomotives, which costs about £560,000 per annum, which is equal to over a guinea per minute night and day all the year through.

Among the items dealt with in very large quantities are rails,

sleepers, chairs, bolts, stationery, uniforms, oil, grease, hay, straw, fodder, harness, wagon covers, timber, paint, cloth, lamps, carpets, clocks, watches, whistles, and so on in endless variety.

Not only is it necessary to exercise the strictest scrutiny over deliveries to and from the stores, but it is also obviously equally essential that the qualities as well as the quantities should be maintained up to the samples; and in order that this may be achieved a special department has been created for the sole purpose of testing materials and goods of every description. The tests applied are chemical, microscopical, and mechanical.

The Superintendent has an assistant and a large staff associated with him, including men with a very wide knowledge and great skill in the examination of materials.

THE HOTELS AND REFRESHMENT DEPARTMENT

The last great administrative division—the seventh—is that relating to hotels and refreshments; and many passengers after or during a long journey will doubtless regard the commissariat as of the very highest advantage and utility, inasmuch as it ministers so much to their comfort. It is under the charge of a committee of five directors and a Manager (Mr.

William Towle), who has his chief offices at the Midland Grand Hotel in London.

The hotels of the Company are great aids to traffic in providing accommodation to passengers, and there is great inducement to travellers to select a route which is well supplied with hotels at large centres.

The Midland line is unusually fortunate in this respect. It has the Grand Hotel at St. Pancras, London, the Adelphi Hotel at Liverpool, the Midland Hotel at Derby, the Midland Hotel at Bradford, the Midland Hotel at Morecambe, the Queen's Hotel, Leeds, the Midland Hotel, Manchester, and last, but certainly not least, the Residential Hotel, Heysham Towers, Heysham, near Morecambe.



MR. W. TOWLE.

There are also refreshment-rooms both first and third class at all large stations on the main lines ; and these rooms are now furnished with a richness and luxuriance which cannot be surpassed, whilst the general refreshment accommodation for third-class passengers especially has developed enormously with advantage to all concerned.

Each of the hotels has a district or local manager, who is responsible for the working and management of the hotel under his care. The refreshment-rooms all over the line are also under this department, as well as the breakfast, luncheon, dining, and sleeping cars.

District inspectors examine and report frequently concerning the working of the hotels and the refreshment-rooms, and great care is given to the maintenance of the furniture, fittings, and decorations.

The whole of the foods and drinks supplied by the contractors to the Company and delivered at the various hotels and refreshment-rooms are carefully examined by skilled experts, who have to certify both as to quantity and quality, thus assuring the public of being supplied with only the soundest and most wholesome refreshments.

The linen used in the sleeping cars is also under the care of this department.

THE DETECTIVE DEPARTMENT

The Detective Department of the Midland is under the control of Chief-Superintendent Carr, who has occupied that position for many years. The duties, it need hardly be said, are of a very varied character, and frequently call for the exercise of great tact and skill. The protection of the whole of the Company's property, including its vast warehouses and stores, as well as the whole of the goods in transit, in addition to the protection of the Company from frauds of a widely diversified character, including passengers travelling without tickets, all come within the scope of this branch of the service.

One of the best stories of fraud on the Midland was told in the *Nottingham Guardian* in October, 1849, which we cannot refrain from quoting :—

“ A few days ago a woman got in a second-class carriage attached to a down train for Nottingham. In her arms she carried a ponderous-looking babe dressed in long clothes, and with its head entirely concealed through her shawl. Several times during her journey the half-smothered infant made a noise very like the barking of a dog. The repetition of these unnatural sounds aroused the sympathy of an old lady, who remarked, ‘What a dreadful cold that child’s got, to be sure!’ The distressed baby’s nurse replied that the poor thing had a severe attack of influenza, which she was afraid would turn

to whooping cough. At Nottingham the active ticket-collector opened the door, and exclaimed rather abruptly, 'Tickets, please.' This awakened the slumbering object in the woman's arms, and an angry, but this time unmistakable bark burst forth, to the astonishment of the official, who lifted up the shawl and exposed the head of one of the canine species ludicrously wrapped in an infant's long dress. Extra fare was immediately demanded, which the woman reluctantly paid, amidst the jeers and laughter of the passengers."

APPENDIX

THE MIDLAND RAILWAY INSTITUTE

THE Midland Railway Institute at Derby, which was opened on February 15th, 1895, is really an organisation of old standing, but for many years the quarters allotted to it were altogether inadequate for the amount of business carried on in its name. It had



READING ROOM, MIDLAND INSTITUTE, DERBY.

long outgrown in point of membership and other respects the accommodation originally provided for it, and with the extension of the frontage of the railway station an opportunity was seized of erecting, on adjacent property possessed by the Company, a structure of sufficient magnitude to comply with present-day necessities.

Its objects are well in keeping with the educational spirit of the age, the mental culture and social comfort of the members being provided for in a comprehensive manner. The building comprises a library with shelving capacity for 14,000 to 16,000 volumes, a com-

modious newsroom, magazine and writing-room, three classrooms, chess and card room, billiard-room with three tables, lecture and concert hall capable of seating upwards of five hundred people, coffee-room, and other facilities. The structure covers an area of 960 square yards. It is built of pressed red brick with terra-cotta dressings, and provided with electric light throughout, which in the concert hall is so arranged as to permit of various stage effects. The concert hall is perhaps the most elaborate part of the interior of the building, and is certainly one of the finest in Derby.

There are 2,300 members of the Institute, there are over 13,000 volumes, with an annual issue of between 60,000 and 70,000, while 140 different publications are taken.

UNDERTAKINGS ACQUIRED BY THE MIDLAND

The following thirty-two undertakings, which were originally carried out or authorised by separate and independent companies, have at various dates since the formation of the Midland Company in 1844 been vested in and become incorporated as part of its system:—

	Date of vesting.
Ashby Canal and tramways	1846
Barnoldswick	1899
Bedford and Northampton	1885
Birmingham and Gloucester	1846
Birmingham West Suburban	1875
Bristol and Gloucester	1846
Cheltenham Station	1895
Chesterfield and Brampton	1871
Cromford Canal	1871
Dore and Chinley	1888
Dursley and Midland Junction	1882
Erewash Valley	1845
Evesham and Redditch	1882
Hemel Hempsted	1886
Hereford, Hay, and Brecon	1886
Keighley and Worth Valley	1881
Kettering, Thrapston, and Huntingdon	1897
Leeds and Bradford	1851
Leicester and Swannington	1846
Manchester, Buxton, Matlock, and Midlands Junction	1871
Manchester South District	1877
Mansfield and Pinxton	1848
Midland and South Western Junction (old)	1874
North Western (Little)	1871
Oakham Canal	1846
Redditch	1874
Sheffield and Rotherham	1845
Stonehouse and Nailsworth	1886
Swansea Vale	1876
Tewkesbury and Malvern	1876
Wolverhampton and Walsall	1876
Wolverhampton, Walsall, and Midland Junction	1874

JOINT RAILWAYS

The following is a list of the nineteen undertakings which have been bought or made jointly by the Midland and other Companies :—

Miles.						
29½	Ashby and Nuneaton Line (Mid. and L. & N.W.).					
6	Bristol Port Railway and Pier (Mid. and G. W.).					
1½	Carlisle Goods Traffic Committee (Mid., Cal., G. & S.W., and L. & N.W.).					
9	Clifton Extension (Mid. and G.W.).					
125	Cheshire Lines (Mid., G.C., and G.N.).					
2½	Enderby Branch (Mid. and L. & N.W.).					
9½	Furness and Midland (Mid. and Furness).					
5	Halesowen (Mid. and G.W., jointly worked).					
4½	Norfolk and Suffolk (Mid., G.N., and G.E.).					
5½	North & South Western Junction (Mid., L. & N.W., and N. Lond.).					
6½	Otley and Ilkley (Mid. and N.E.).					
188½	<table><tr><td rowspan="3">{</td><td>Peterborough, Wisbech, and Sutton</td><td rowspan="3">} Mid. and G.N.</td></tr><tr><td>Bourne and Lynn</td></tr><tr><td>Eastern and Midlands</td></tr></table>	{	Peterborough, Wisbech, and Sutton	} Mid. and G.N.	Bourne and Lynn	Eastern and Midlands
{	Peterborough, Wisbech, and Sutton		} Mid. and G.N.			
	Bourne and Lynn					
	Eastern and Midlands					
82	Port Patrick and Wigtownshire (Mid., Cal., G. & S.W., and L. & N.W.).					
42	Severn and Wye (Mid. and G.W.).					
28½	Sheffield and Midland Railway Cos. Committee (Mid. and G.C.).					
94½	Somerset and Dorset (Mid. and L. & S.W.).					
19½	Swinton and Knottingley (Mid. and N.E.).					
6	Tottenham and Forest Gate (Mid. and L.T. & S., joint control).					
4½	Tottenham and Hampstead Junction (Mid. and G.E., jointly worked and largely owned).					

MIDLAND RAILWAY DIVIDENDS

MIDLAND COUNTIES.

	Dividend for Half- year.	Per cent. for Year.
1841—June.	2 10 0	4½
Dec.	2 0 0	
1842—June.	1 10 0	3
Dec.	1 10 0	
1843—June.	1 4 0	3½
Dec.	2 4 0	
1844—June.	2 2 6	

NORTH MIDLAND.

	Dividend for Half- year.	Per cent. for Year.
1841—June.	2 0 0	3½
Dec.	1 10 0	
1842—June.	1 0 0	2½
Dec.	1 12 6	
1843—June.	1 10 0	3½
Dec.	2 0 0	
1844—June.	2 2 0	

BIRMINGHAM AND DERBY JUNCTION.

	Dividend for Half- year.	Per cent. for Year.
1840—June.	1 0 0	1¼
Dec.	0 15 0	
1841—June.	1 2 6	2¼
Dec.	1 2 6	
1842—June.	0 12 0	1½
Dec.	1 0 0	
1843—June.	0 5 0	1¼
Dec.	1 8 0	
1844—June.	1 6 8	

THE DIVIDEND SINCE THE AMALGAMATION

	Dividend for Half- year.	Per cent. for Year.
1844—Dec.	3 0 0	
1845—June.	3 0 0	61½
Dec.	3 13 0	
1846—June.	3 10 0	7
Dec.	3 10 0	
1847—June.	3 10 0	7
Dec.	3 10 0	
1848—June.	3 0 0	5½
Dec.	2 10 0	
1849—June.	1 10 0	2½
Dec.	1 5 0	
1850—June.	0 15 0	2
Dec.	1 5 0	
1851—June.	1 5 0	2½
Dec.	1 7 6	
1852—June.	1 10 0	3½
Dec.	1 12 6	
1853—June.	1 12 6	3½
Dec.	1 12 6	
1854—June.	1 15 0	3½
Dec.	1 17 6	
1855—June.	1 15 0	3½
Dec.	1 17 6	
1856—June.	2 0 0	4½
Dec.	2 2 6	
1857—June.	2 2 6	5
Dec.	2 10 0	
1858—June.	2 2 6	7
Dec.	2 15 0	
1859—June.	2 12 6	5½
Dec.	3 0 0	
1860—June.	3 5 0	6½
Dec.	3 10 0	
1861—June.	3 2 6	6½
Dec.	3 10 0	
1862—June.	2 15 0	6
Dec.	3 5 0	
1863—June.	2 17 6	6½
Dec.	3 10 0	
1864—June.	3 10 0	7½
Dec.	3 17 6	
1865—June.	3 5 0	6½
Dec.	3 10 0	
1866—June.	3 0 0	6½
Dec.	3 2 6	
1867—June.	2 15 0	5½
Dec.	2 15 0	

	Dividend for Half- year.	Per cent. for Year.
1868—June.	2 10 0	5½
Dec.	2 17 6	
1869—June.	2 17 0	6½
Dec.	3 5 6	
1870—June.	3 2 6	6½
Dec.	3 7 6	
1871—June.	3 5 0	7
Dec.	3 15 0	
1872—June.	3 10 0	7½
Dec.	3 15 0	
1873—June.	3 5 0	6½
Dec.	3 5 0	
1874—June.	2 15 0	6
Dec.	3 5 0	
1875—June.	3 0 0	6
Dec.	3 0 0	
1876—June.	2 10 0	5½
Dec.	2 17 6	
1877—June.	2 10 0	5½
Dec.	2 17 6	
1878—June.	2 10 0	5½
Dec.	2 17 6	
1879—June.	2 10 0	5½
Dec.	3 2 6	
1880—June.	3 0 0	6½
Dec.	3 2 6	
1881—June.	2 15 0	5½
Dec.	3 2 6	
1882—June.	2 15 0	5½
Dec.	3 2 6	
1883—June.	2 15 0	5½
Dec.	3 2 6	
1884—June.	2 10 0	5½
Dec.	2 17 6	
1885—June.	2 7 6	5½
Dec.	2 15 0	
1886—June.	2 0 0	4½
Dec.	2 12 6	
1887—June.	2 2 6	4½
Dec.	2 12 6	
1888—June.	2 5 0	5½
Dec.	3 0 0	
1889—June.	2 12 6	6
Dec.	3 7 6	
1890—June.	2 15 0	6½
Dec.	3 10 0	

	Dividend for Half- year.	Per cent. for Year.
1891—June.	2 17 6	6½
Dec.	3 10 0	
1892—June.	2 12 6	6
Dec.	3 7 6	
1893—June.	2 7 6	3½
Dec.	1 10 0	
1894—June.	2 7 6	5½
Dec.	2 17 6	
1895—June.	2 0 0	5½
Dec.	3 2 6	
1896—June.	2 10 0	6
Dec.	3 10 0	
1897—June.	2 12 6	5½
Dec.	3 5 0	
1898—June.	2 12 6	5½
Dec.	3 5 0	
1899—June.	2 17 6	5½
Dec.	3 0 0	
1900—June.	2 12 6	
Dec.		
1901—June.		
Dec.		
1902—June.		
Dec.		
1903—June.		
Dec.		
1904—June.		
Dec.		
1905—June.		
Dec.		
1906—June.		
Dec.		
1907—June.		
Dec.		
1908—June.		
Dec.		
1909—June.		
Dec.		
1910—June.		
Dec.		
1911—June.		
Dec.		
1912—June.		
Dec.		
1913—June.		
Dec.		

From the table of dividends it will be observed that since the amalgamation the returns to the shareholders have varied from the low-water mark of 2 per cent. in 1850 to $7\frac{3}{4}$ per cent. in 1864. During the fifty-six completed years, for each £100 share there has been paid in dividends the sum of £307 8s., or an average of slightly less than $5\frac{1}{2}$ per cent. per annum for the whole period, namely £5 9s. 9 $\frac{1}{2}$ d.

THE COAT OF ARMS

The fearful and wonderful creature perched on the top of the Midland Railway Company's coat of arms, painted on the passenger carriages and what not, is known as a wyvern, a sort of winged serpent, which, like the dragon, griffin, griffon, unicorn, etc., never existed outside the Heralds' College. The buck or deer within the park palings represents the town or "by" of the deer—Derby; on the right hand the castle and ships are the arms of the city of Bristol; and on the left are those of Birmingham. The arms of Lincoln are depicted under the deer, with Leeds on the right and Leicester on the left. On the seal of the Company Nottingham is represented instead of Bristol. The dolphin is on the left, the salamander on the right, and the wyvern on the top of the shield. At the time of the Saxon Heptarchy Leicester was the capital of Mercia, and the wyvern was the crest of the Mercian kings. The wyvern is a quartering of the town arms of Leicester, and was adopted as the crest of the Leicester and Swannington Line, out of which sprang the present Midland Railway. Hence its forming an important part and parcel of the Midland Company's coat of arms.



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